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## CLAIMS

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(57) [Claim(s)]

[Claim 1] The absorber arranged so that it may have an absorptivity core and a wearer's crotch may be covered between a top sheet and a backseat The handle part of the couple arranged along the longitudinal direction edge of this absorber One conclusion means prepared in the side edge of each handle part The edge of a

couple A lengthwise center line and a longitudinal direction center line Are the disposable diaper equipped with the above and the stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The lengthwise center line of a disposable diaper and the 1st line of the disposable diaper which is the intersection of the edge on the other hand which touches a stress relaxation zone from a part of edge on the other hand make the handle part side edge located in the above-mentioned one side edge side from the point of crossing the side edge of a handle part the 1st side edge field. The 2nd line which touches a stress relaxation zone from a part of handle part edge by the side of the longitudinal direction center line of a disposable diaper makes the handle part side edge located in the above-mentioned longitudinal direction center line side from the point of crossing the side edge of a handle part the 2nd side edge field. A conclusion means is characterized by being attached so that it may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[Claim 2] It is the disposable diaper according to claim 1 characterized by on the other hand being [ of the side edge of the handle part which a part of edge counters on the other hand and the above-mentioned disposable diaper of the above-mentioned disposable diaper ] an intersection with the edge.

[Claim 3] The above-mentioned stress relaxation zone is a disposable diaper according to claim 1 characterized by including two or more non-deformed zones and two or more deformation zones.

[Claim 4] It is the disposable diaper according to claim 3 which the amount of above-mentioned periphery is extensionless, and is characterized by the above-mentioned stress relaxation zone being extensibility.

[Claim 5] It is the disposable diaper according to claim 4 which the above-mentioned handle part consists of material of extensionless, and is characterized by the stress relaxation zone which was processed into the material of extensionless and processed not making the amount of periphery shrunken so that the above-mentioned stress relaxation zone can be elongated, when stress is applied.

[Claim 6] The above-mentioned handle part is a disposable diaper according to claim 5 characterized by the bird clapper from the laminated material of the film of liquid impermeability, a porous forming film, and a nonwoven fabric.

[Claim 7] It is the disposable diaper according to claim 1 which can elongate a part for the above-mentioned periphery with high stress, and is characterized by the ability to elongate the above-mentioned stress relaxation zone with low stress.

[Claim 8] The disposable diaper according to claim 1 characterized by changing the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field.

[Claim 9] The rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the above-mentioned 2nd side edge field is a

disposable diaper according to claim 8 characterized by the above-mentioned anchoring field being larger than the rate which laps with the above-mentioned 1st side edge field.

[Claim 10] the anchoring field to the handle part of the above-mentioned conclusion means is included in the 2nd side edge field -- having -- the [ and ] -- the disposable diaper according to claim 9 characterized by the part and heavy bird clapper of 1 side-edge field

[Claim 11] The rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the above-mentioned 1st side edge field is a disposable diaper according to claim 8 characterized by the above-mentioned anchoring field being larger than the rate which laps with the above-mentioned 2nd side edge field.

[Claim 12] the anchoring field to the handle part of the above-mentioned conclusion means is included in the 1st side edge field -- having -- the [ and ] -- the disposable diaper according to claim 11 characterized by the part and heavy bird clapper of 2 side-edge field

[Claim 13] The disposable diaper according to claim 1 characterized by making equivalent the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field.

[Claim 14] The above-mentioned conclusion means is a disposable diaper according to claim 13 characterized by being attached in the side edge of a handle part so that the center line of a conclusion means may be arranged on the line which bisects the 1st line of the above, and the 2nd line.

[Claim 15] Lengthwise center line the [ the 1st arranged by approaching the edge of a couple, and ] -- 2 waist field The crotch field arranged in relation to a longitudinal direction center line The absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat One conclusion means prepared in the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part Are the disposable diaper equipped with the above and the stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The lengthwise center line of a disposable diaper and the 1st line from a part of edge close to the 1st waist field of the disposable diaper which is the intersection of the edge on the other hand to the side edge of a handle part in contact with a stress relaxation zone are set up. It considers as the direction component-of-a-force participation zone of waist where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned edge side bordering on the 1st line to a part of edge of the above-mentioned disposable diaper. The handle part side edge in the above-mentioned direction component-of-a-force participation zone of waist is made into the 1st side edge field. The 2nd line from a part of handle part edge located in the

crotch field side of a disposable diaper to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force participation zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on the 2nd line to a part of above-mentioned handle part edge. The handle part side edge in the above-mentioned direction component-of-a-force participation zone of the circumference of a foot is made into the 2nd side edge field, and a conclusion means is characterized by being attached in a handle part so that the anchoring field to a conclusion means handle part may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[Claim 16] It is the disposable diaper according to claim 15 characterized by on the other hand being [ of the side edge of the handle part which a part of edge counters on the other hand and the above-mentioned disposable diaper of the above-mentioned disposable diaper ] an intersection with the edge.

[Claim 17] The disposable diaper according to claim 15 characterized by changing the pull strength by the conclusion means which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are changed, and carries out direct action to each component-of-a-force intervention zone.

[Claim 18] The disposable diaper according to claim 17 characterized by attaching the above-mentioned conclusion means so that more pull strength to the circumference component-of-a-force intervention zone of a foot which carries out direct action to a part of handle part edge by the above-mentioned conclusion means than the waist component-of-a-force intervention zone which carries out direct action to a part of edge of a disposable diaper may be distributed.

[Claim 19] The rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the above-mentioned 2nd side edge field is a disposable diaper according to claim 18 characterized by the above-mentioned anchoring field being larger than the rate which laps with the above-mentioned 1st side edge field.

[Claim 20] the anchoring field to the handle part of the above-mentioned conclusion means is included in the 2nd side edge field -- having -- the [ and ] -- the disposable diaper according to claim 19 characterized by the part and heavy bird clapper of 1 side-edge field

[Claim 21] The disposable diaper of the claim 20 characterized by attaching the above-mentioned conclusion means in [ angle ]  $0 < \theta < 45$  degrees towards the direction of the edge which approached the side edge of a handle part to the above-mentioned 1st waist field to the above-mentioned longitudinal direction center line.

[Claim 22] The disposable diaper according to claim 17 characterized by attaching

the above-mentioned conclusion means so that more pull strength to the waist component-of-a-force intervention zone which carries out direct action to a part of edge of a disposable diaper by the above-mentioned conclusion means than the circumference component-of-a-force intervention zone of a foot which carries out direct action to a part of handle part edge may be distributed.

[Claim 23] The rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the above-mentioned 1st side edge field is a disposable diaper according to claim 22 characterized by the above-mentioned anchoring field being larger than the rate which laps with the above-mentioned 2nd side edge field.

[Claim 24] the anchoring field to the handle part of the above-mentioned conclusion means is included in the 1st side edge field -- having -- the [ and ] -- the disposable diaper according to claim 23 characterized by the part and heavy bird clapper of 2 side-edge field

[Claim 25] The disposable diaper of a claim 24 with which the above-mentioned conclusion means is characterized by being attached in the side edge of a handle part in [ angle ]  $0 < \theta < 45$  degrees towards the above-mentioned crotch field to the above-mentioned longitudinal direction center line.

[Claim 26] The disposable diaper according to claim 15 with which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are made equivalent, and pull strength by the above-mentioned conclusion means is characterized by attaching the above-mentioned conclusion means so that it may be equally distributed to each component-of-a-force intervention zone.

[Claim 27] The above-mentioned conclusion means is a disposable diaper according to claim 26 characterized by being attached in the side edge of a handle part so that the center line of a conclusion means may be arranged on the line which bisects the 1st line of the above, and the 2nd line.

[Claim 28] the [ the 1st arranged by approaching the edge of a couple, and ] -- 2 waist field The crotch field arranged in relation to a longitudinal direction center line The absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat The leg elastic means arranged along with the lengthwise side edge of the absorber in a crotch field One conclusion means prepared in the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part Are the disposable diaper equipped with the above and the stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The line from a part of edge close to the 1st waist field of a disposable diaper to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of waist where a part of pull strength by the conclusion means carries out direct action

of the 1st waist field portion located in the above-mentioned edge side bordering on this line to a part of edge of the above-mentioned disposable diaper. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of waist is made into the 1st side edge field. The line from the edge by the side of the 1st waist field of a leg elastic means to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on this line to the edge of the above-mentioned leg elastic means. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of the circumference of a foot is made into the 2nd side edge field, and a conclusion means is characterized by being attached in a handle part so that the anchoring field to the handle part of a conclusion means may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[Claim 29] The disposable diaper according to claim 28 characterized by changing the pull strength by the conclusion means which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are changed, and carries out direct action to each component-of-a-force intervention zone.

[Claim 30] The disposable diaper according to claim 29 characterized by attaching the above-mentioned conclusion means so that more pull strength to the circumference component-of-a-force intervention zone of a foot which carries out direct action to the edge of a leg elastic means by the above-mentioned conclusion means than the waist component-of-a-force intervention zone which carries out direct action to a part of edge of a disposable diaper may be distributed.

[Claim 31] The disposable diaper according to claim 29 characterized by attaching the above-mentioned conclusion means so that more pull strength to the waist component-of-a-force intervention zone which carries out direct action to a part of edge of a disposable diaper by the above-mentioned conclusion means than the circumference component-of-a-force intervention zone of a foot which carries out direct action to the edge of the above-mentioned leg elastic means may be distributed.

[Claim 32] The disposable diaper according to claim 28 with which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are made equivalent, and pull strength by the above-mentioned conclusion means is characterized by attaching the above-mentioned conclusion means so that it may be equally distributed to each component-of-a-force intervention zone.

[Claim 33] the [ the 1st arranged by approaching the edge of a couple, and ] -- 2

waist field The crotch field arranged in relation to a longitudinal direction center line The absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat The lumbar part elastic means arranged along with the longitudinal direction side edge of the absorber in the 1st waist field One conclusion means prepared in the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part Are the disposable diaper equipped with the above and the stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The line from the handle part side edge section of a waist elastic means to the side edge of a handle part in contact with the stress relaxation zone by the side of this edge is set up. The 1st waist field portion located in the edge side which approached the 1st waist field of a disposable diaper bordering on this line It considers as the direction component-of-a-force participation zone of waist as for which a part of pull strength by the conclusion means carries out direct action to the edge of the above-mentioned waist elastic means. The handle part side edge in the above-mentioned direction component-of-a-force participation zone of waist is made into the 1st side edge field. The line from a part of handle part edge located in the crotch field side of a disposable diaper to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force participation zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on this line to a part of above-mentioned handle part edge. The handle part side edge in the above-mentioned direction component-of-a-force participation zone of the circumference of a foot is made into the 2nd side edge field, and a conclusion means is characterized by being attached in a handle part so that the anchoring field to the handle part of a conclusion means may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[Claim 34] The disposable diaper according to claim 33 characterized by changing the pull strength by the conclusion means which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are changed, and carries out direct action to each component-of-a-force intervention zone.

[Claim 35] The disposable diaper according to claim 34 characterized by attaching the above-mentioned conclusion means so that more pull strength to the circumference component-of-a-force intervention zone of a foot which carries out direct action to a part of handle part edge by the above-mentioned conclusion means than the waist component-of-a-force intervention zone which carries out direct action to the edge of a lumbar part elastic means may be distributed.

[Claim 36] The disposable diaper according to claim 34 characterized by attaching



the above-mentioned conclusion means so that more pull strength to the waist component-of-a-force intervention zone which carries out direct action to the edge of a lumbar part elastic means by the above-mentioned conclusion means than the circumference component-of-a-force intervention zone of a foot which carries out direct action to a part of handle part edge may be distributed.

[Claim 37] The disposable diaper according to claim 33 with which the rate to which the anchoring field to the handle part of the above-mentioned conclusion means laps with the 1st side edge field, and the rate to which the above-mentioned anchoring field laps with the 2nd side edge field are made equivalent, and pull strength by the above-mentioned conclusion means is characterized by attaching the above-mentioned conclusion means so that it may be equally distributed to each component-of-a-force intervention zone.

[Claim 38] the [ the 1st arranged by approaching the edge of a couple, and ] -- 2 waist field The crotch field arranged in relation to a longitudinal direction center line The absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat The leg elastic means arranged along with the lengthwise side edge of the absorber in a crotch field One conclusion means prepared in the lumbar part elastic means arranged along with the longitudinal direction side edge of the absorber in the 1st waist field, the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part Are the disposable diaper equipped with the above and the stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The line from the handle part side edge section of a lumbar part elastic means to the side edge of a handle part in contact with the stress relaxation zone by the side of this edge is set up. The 1st waist field portion located in the edge side which approached the 1st waist field of a disposable diaper bordering on this line It considers as the direction component-of-a-force intervention zone of waist as for which a part of pull strength by the conclusion means carries out direct action to the edge of the above-mentioned lumbar part elastic means. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of waist is made into the 1st side edge field. The line from the edge by the side of the 1st waist field of a leg elastic means to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on this line to the edge of the above-mentioned leg elastic means. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of the circumference of a foot is made into the 2nd side edge field, and a conclusion means is characterized by being attached in a handle part so that the anchoring field to the

handle part of a conclusion means may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention distributes effectively the pull strength by one conclusion means prepared in the side edge of the handle part of the couple arranged along the longitudinal direction edge of an absorber in the direction of the circumference of the waist, and the direction of the circumference of a foot, and it relates to the disposable diaper which gives a wearer the amenity while it prevents the liquid leak from the circumference of a wearer's foot, and the circumference of the waist.

[0002]

[Description of the Prior Art] The disposable diaper currently generally used is equipped with the conclusion means prepared in the absorber arranged so that it may have an absorptivity core and a wearer's crotch may be covered between a top sheet and a backseat, the handle part of the couple arranged along the longitudinal direction edge of an absorber at the circumference of the waist of a disposable diaper, and the side edge of each handle part, and is constituted.

[0003] A wearer is equipped with the main part of a diaper by the usual method, and it is made to attach in a wearer the conclusion means prepared in the handle part on the occasion of use in the above-mentioned disposable diaper by fixing to the circumference of the waist of the disposable diaper of a conclusion means and an opposite side. In the disposable diaper, when a wearer is equipped, it fits by both of the circumference of a wearer's waist, and the circumference of a foot, and it is required that the liquid leak from the leg and the lumbar part should be especially prevented at the time of wear.

[0004] However, in case a wearer was equipped with the main part of a diaper in the disposable diaper of the form which prepared one conclusion means in the side edge of a handle part, it was difficult to centralize the pull strength of a conclusion means to both of the circumference of a wearer's waist, and the circumference of a foot effectively. That is, when it attached so that a crevice might be made to the circumference of a wearer's foot, and a liquid leak might arise from the leg while in use and the circumference of a wearer's foot might be fitted contrary to this, if a disposable diaper was attached so that the circumference of a wearer's waist may be fitted exactly, the crevice was made to the circumference of a wearer's waist, and there was a difficulty that the circumference of a wearer's waist could not be fitted exactly.

[0005] Such a technical problem was solved, and various improvement has been made in order to improve the fit nature in the circumference of a wearer's foot, and the circumference of the waist.

[0006] The U.S. patent No. 4,680,030 given to Coates and others, The U.S. patent No. 4,850,988 given to Aledo and others, the U.S. patent 4,826th given to Ahr, No. 499, The U.S. patent No. 4,937,887 given to Schreiner is indicating the technology which can improve fit nature in both of the circumference of a foot, and the circumference of the waist by attaching two conclusion meanses in each of the handle part of the couple arranged at the circumference of the waist of a disposable diaper.

[0007] However, two conclusion meanses attached in each handle part needed to be operated, respectively, and the room of improvement was left behind in the operability at the time of anchoring of a conclusion means.

[0008] By the U.S. patent No. 4,911,702 given to O'Leary and others who solved such a fault, and the U.S. patent No. 4,857,067 given to Wood and others, the technology on which the pull strength of a conclusion means is centralized is effectively indicated to the circumference of the waist, and the circumference of a foot with one conclusion means.

[0009] However, these have not made reference about the fitting location of the conclusion means which made it possible to centralize the pull strength on the circumference of the waist, and the circumference of a foot effectively and directly, when one conclusion means is attached in the handle part of a disposable diaper. Moreover, reference is not made about the fitting location of a conclusion means by which the rate which distributes the pull strength by the conclusion means to the circumference of the waist and the circumference of a foot was changed intentionally.

[0010] The purpose of this invention is offering the disposable diaper which has the conclusion means attached in the position which can centralize the pull strength of a conclusion means on the circumference of the foot of a disposable diaper, and the circumference of the waist effectively and directly.

[0011] Other purposes of this invention are offering the disposable diaper with which

the conclusion means' was attached in a position which is distributed at a rate which the pull strength of a conclusion means meant to the circumference of a foot, and the circumference of the waist.

[0012] Other purposes of this invention are offering the disposable diaper which has the conclusion means attached in the position which can centralize the pull strength of a conclusion means on the circumference of the leg elastic member prepared in the circumference of the foot of a disposable diaper, and the waist effectively and directly.

[0013] Other purposes of this invention are offering the disposable diaper which has the conclusion means attached in the position which can centralize the pull strength of a conclusion means on the lumbar part elastic member prepared in the circumference of the waist of a disposable diaper the circumference of the foot of a disposable diaper effectively and directly.

[0014]

[Means for Solving the Problem] The absorber arranged so that the disposable diaper of this invention may have an absorptivity core and may cover a wearer's crotch between a top sheet and a backseat, In one conclusion means prepared in the handle part of the couple arranged along the longitudinal direction edge of this absorber, and the side edge of each handle part, the edge of a couple, and the disposable diaper which has a longitudinal direction center line The stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The 1st line of a disposable diaper which touches a stress relaxation zone from a part of edge on the other hand makes the handle part side edge located in the above-mentioned one side edge side from the point of crossing the side edge of a handle part the 1st side edge field. The 2nd line which touches a stress relaxation zone from a part of handle part edge by the side of the longitudinal direction center line of a disposable diaper makes the handle part side edge located in the above-mentioned longitudinal direction center line side from the point of crossing the side edge of a handle part the 2nd side edge field. The anchoring field to the handle part of a conclusion means is attached so that it may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[0015] a lap to the anchoring field of the above-mentioned conclusion means, and the 1st side edge field -- the lap rate of an anchoring field and the 2nd side edge field can be adjusted comparatively Each of this lap rate may be changed and you may make it set it up equally. An anchoring field may make larger than a lap rate with the 2nd side edge field the rate which laps with the 1st side edge field, and each lap rate may make the lap rate with the 2nd side edge field larger than a lap rate with the 1st side edge field.

[0016] Furthermore, the above-mentioned conclusion means can also be attached with the inclination in a handle part side edge.

[0017] the [ the 1st furthermore arranged by the disposable diaper of this invention

approaching the edge of a couple, and ] -- with 2 waist field The crotch field arranged in relation to a longitudinal direction center line, and the absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat, In the disposable diaper which has one conclusion means prepared in the leg elastic means arranged along with the lengthwise side edge of the absorber in a crotch field, the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part The stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The line from a part of edge close to the 1st waist field of a disposable diaper to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of waist where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned edge side bordering on this line to a part of edge of the above-mentioned disposable diaper. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of waist is made into the 1st side edge field. The line from the edge by the side of the 1st waist field of a leg elastic means to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on this line to the edge of the above-mentioned leg elastic means. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of the circumference of a foot is made into the 2nd side edge field, and the anchoring field to the handle part of a conclusion means is attached so that it may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[0018] the [ the 1st furthermore arranged by the disposable diaper of this invention approaching the edge of a couple, and ] -- with 2 waist field The crotch field arranged in relation to a longitudinal direction center line, and the absorber which has an absorptivity core and is arranged in relation to a crotch field between a top sheet and a backseat, In the disposable diaper which has one conclusion means prepared in the lumbar part elastic means arranged along with the longitudinal direction side edge of the absorber in the 1st waist field, the handle part of the couple arranged to the 1st waist field, and the side edge of each handle part The stress relaxation zone where tensile stress is smaller than a part for a periphery is established in the field except a part for the periphery of the above-mentioned handle part. The line from the handle part side edge section of a lumbar part elastic means to the side edge of a handle part in contact with the stress relaxation zone by the side of this edge is set up. The 1st waist field portion located in the edge side which approached the 1st waist field of a disposable diaper bordering on this line It considers as the direction component-of-a-force intervention zone of waist as for

which a part of pull strength by the conclusion means carries out direct action to the edge of the above-mentioned lumbar part elastic means. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of waist is made into the 1st side edge field. The line from a part of handle part edge located in the crotch field side of a disposable diaper to the side edge of a handle part in contact with a stress relaxation zone is set up. It considers as the direction component-of-a-force intervention zone of the circumference of a foot where a part of pull strength by the conclusion means carries out direct action of the 1st waist field portion located in the above-mentioned crotch field side bordering on this line to a part of above-mentioned handle part edge. The handle part side edge in the above-mentioned direction component-of-a-force intervention zone of the circumference of a foot is made into the 2nd side edge field, and the anchoring field to the handle part of a conclusion means is attached so that it may lap at least with a part of 1st side edge field and a part of 2nd side edge field.

[0019]

[Function] In the disposable diaper of this invention, the pull strength by the conclusion means concerning the stress relaxation zone can be weakened by the stress relaxation zone where tensile stress is smaller than a part for the periphery prepared in the field except a part for the periphery of the handle part arranged along the longitudinal direction edge of an absorber. In a part for a periphery, since tensile stress is comparatively high, the pull strength by the conclusion means can act on the circumference of the waist of a disposable diaper, and the circumference field of a foot effectively and directly, without the ability weakening. the [ the 1st side edge field where, as for the conclusion means, the line of a disposable diaper which touches a stress relaxation zone from a part of edge or a part of handle part edge by the side of the longitudinal direction center line of a disposable diaper was set up on the other hand in relation to each point which crosses the side edge of a handle part, and ] -- it is attached so that it may lap with a part of 2 side-edge field. Therefore, as for the pull strength of a conclusion means, the thing of a disposable diaper acted on a part of edge or a part of handle part edge by the side of the longitudinal direction center line of a disposable diaper on the other hand is surely guaranteed irrespective of the configuration of a stress relaxation zone, the configuration of a handle part, etc.

[0020] the [ the rate to which the anchoring field of the above-mentioned conclusion means laps with the 1st side edge field or ] -- adjusting the rate which laps with 2 side-edge field -- a disposable diaper -- on the other hand, this pull strength can be directly adjusted to the handle part edge by the side of a part of edge or the longitudinal direction center line of a disposable diaper. For example, when the rate to which an anchoring field laps with the 1st side edge field is larger than the rate which laps with the 2nd side edge field, the pull strength by the conclusion means is greatly applied by a part of one side edge of a disposable diaper. In being reverse, it applies the pull strength by the conclusion means greatly by a

part of handle part edge by the side of the longitudinal direction center line of a disposable diaper.

[0021] Distribution of pull strength can be further adjusted with the degree of setting angle to the handle part of a conclusion means. When a conclusion means is leaned and attached in the direction of the circumference edge of the waist of a disposable diaper, the amount of distribution of the pull strength concentrated on the circumference of the foot of a disposable diaper increases. Moreover, when a conclusion means is leaned and attached in the direction of the longitudinal direction center line of a disposable diaper, the amount of distribution of the pull strength concentrated on the circumference of the waist of a disposable diaper increases.

[0022] the [ the above-mentioned 1st side edge field or ] -- when 2 side-edge field is set up in relation to each point at which the line which touches a stress relaxation zone crosses a handle part side edge from the edge of a lumbar part elastic means, or the edge of a leg elastic means, the pull strength of a conclusion means is guaranteed to be alike and to surely be transmitted, respectively

[0023]

[Example] The example of this invention is explained per drawing below. Drawing 1 shows the development of the disposable diaper by this invention. This disposable diaper 1 has 1st waist field 2a, crotch field 2b, and 2nd waist field 2c.

[0024] The absorber 3 with which the above-mentioned disposable diaper 1 used the whole configuration as the abbreviation rectangle, the sandglass type, T type, the unsymmetrical form, etc., The side flap 4 prepared in the both-sides portion of this absorber 3, and the elastic body 5 which is arranged along with the longitudinal direction of this side flap 4, and gives elasticity to the side flap 4, It consists of one conclusion means 7 prepared in the handle parts 6 and 6 of the couple prolonged in a longitudinal direction in the longitudinal direction edge of an absorber 3 in 1st waist field 2a, and the side edge of each handle part 6.

[0025] Drawing 2 is a cross section by the A-A line in drawing 1 . The above-mentioned absorber 3 is formed from the liquid permeability top sheet 8, the absorptivity core 9, and the non-liquid permeability backseat 10, as shown in drawing 2 . The top sheet 8 and a backseat 10 are bigger length as a whole than the absorptivity core 9 and width of face, it is prolonged outside across the edge of the absorptivity core 9, and the side flap 4 is formed in crotch field 2b of the extension of a backseat 10 and the top sheet 8 at least. The elastic body 5 for giving elasticity to the side flap 4 is arranged at this side flap 4.

[0026] The above-mentioned absorptivity core 9 has the function to be non-stimulative, and to absorb and hold urine and the liquid of other excrement to a wearer's skin, and, generally is manufactured from pulverization wood BARUPU called curdy pulp. Although the configuration and structure of the absorptivity core 9 are changeable if needed, it is necessary to make the general absorption capacity of the absorptivity core 9 correspond to the design charge as a diaper, and a desired use. The size and absorptance of the absorptivity core 9 are changed corresponding

to the wearer from a child to an adult.

[0027] The above-mentioned backseat 10 prevents that the excrement which was absorbed by the absorptivity core 9 and held in it wears the goods in contact with a diaper, for example, a bed sheet, and the bottom, and wets a kind. Therefore, let backseats 10 be composite material, such as a nonwoven fabric covered with polymer films, such as thermoplastic films, such as polyethylene or polypropylene, or the film. Preferably, a backseat 10 is the thermoplastic film by which embossing was carried out so that cloth Mr. appearance might be produced.

[0028] The above-mentioned top sheet 8 is formed from the textile fabrics or the nonwoven fabric which mixed the plastic film which opened for example, porous form, reticulated form, and the hole or the natural fiber (for example, wood fiber or a cotton fiber), the synthetic fiber (a polyester fiber or polypropylene fiber) or the natural fiber, and the synthetic fiber. Preferably, in order to estrange the liquid held in the absorptivity core 9 from a wearer's skin, let the top sheet 8 be hydrophobic material.

[0029] The above-mentioned handle part 6 is joined to the edges on both sides of one end of the absorber 3 which makes the shape of nothing and a rectangle by the well-known means, for example, heat sealing, adhesives, etc. in an abbreviation trapezoidal shape as a whole. A handle part 6 can also be formed from the extension of the backseat 10 of an absorber 3, and the top sheet 8. In this case, or it joins a backseat 10 and the top sheet 8 directly, it can also be made an absorber 3 and one by joining each on both sides of other sheets between a backseat 10 and the top sheet 8, and judging in a predetermined size.

[0030] Preferably, the above-mentioned handle part 6 may be formed by carrying out the porous forming film 12 in the middle, and laminating the nonwoven fabric 11 of the material which mixed the natural fiber, the synthetic fiber or the natural fiber, and the synthetic fiber, the porous forming film 12 made by the well-known method, and polyethylene or the thermoplastic film 13 of polypropylene through adhesives 14 and 15, as shown in drawing 3. When a handle part 6 is formed from the extension of a backseat 10 and the top sheet 8, the above-mentioned nonwoven fabric 11 can be the extension of the top sheet 8, and the above-mentioned thermoplastic film 13 can be the extension of a backseat 10. By inserting the porous forming film 12 in between as mentioned above, it becomes possible to give the waist to the handle part 6 whole, and the handling nature of the handle part 6 at the time of attaching the disposable diaper 1 in a wearer improves.

[0031] As shown in the above-mentioned handle part 6 at drawing 1, the stress relaxation zone 20 is formed in the field except a part for a periphery. This stress relaxation zone 20 has an appearance similar to the appearance of a handle part 6, and is formed in the field except a part for the periphery of a handle part 6. Although it is formed in the field except a part for the periphery of a handle part 6 and is similar to the appearance of this handle part 6 when a handle part 6 is a trapezoid like drawing 1, it is the trapezoid which carried out the appearance smaller than it.



[0032] Also by what was made into the configuration which presents a trapezoid mostly as a whole although it had discontinuity 20a in the longitudinal direction of the disposable diaper 1 as shown in drawing 4 instead of a trapezoid as shown in drawing 1 , although the stress relaxation zone 20 established in the above-mentioned handle part 6 has discontinuity 20b in the direction which intersects perpendicularly with the longitudinal direction of the disposable diaper 1 as shown in drawing 5 , it may make a trapezoid mostly as a whole. As long as this stress relaxation zone 20 has an equivalent effect, it may be a part of three square shape, rectangle, ellipse, and some configurations of a circle.

[0033] As shown in drawing 6 , you may form the stress relaxation zone 20 established in the above-mentioned handle part 6 in the film which consists of material which constitutes a handle part 6, and which was described above by preparing two or more slit 21a in parallel at the longitudinal direction of the disposable diaper 1. As long as this slit 21a does not tell pull strength to an absorber 3 side, it may be one.

[0034] The stress relaxation zone 20 established in the above-mentioned handle part 6 can also be formed by making the handle part 6 whole into the structure of having elasticity, being forming the film which does not have elasticity in a part for the periphery of this handle part 6, and a strand 30, respectively, making a part for this periphery into the zone non-contracting [ expand and ], and making a part for the elastic structured division in the meantime into an elastic exertion zone, as shown in drawing 7 .

[0035] The above-mentioned stress relaxation zone 20 is a field where tensile stress is smaller than a part for a periphery. "Tensile stress" means the thing of the resistance force produced in a body according to the pull strength here, when pull strength joins a certain body. Therefore, the resistance force is the thing of a small field, and in other words, "the field where tensile stress is small" means the thing of the field which can be elongated by comparatively small pull strength. It is contained in the term of "the field where tensile stress is small" when the stress relaxation zone 20 does not exist as a matter of fact (for example, when the whole of the field cuts and lacks).

[0036] The above-mentioned stress relaxation zone 20 is formed as follows preferably. It arranges between the plate 22 which has two or more tooth part 22a for the sheet 21 which constitutes the handle part 6 which was described above as shown in drawing 8 , and the plate 23 which has two or more tooth part 23a, and is formed by pressing only stress relaxation zone 20 portion between the plate 22 which has tooth part 22a, and the plate 23 which has two or more tooth part 23a. Two or more tooth part 23a prepared in the plate 23 is interrupted by slot 25a of a narrow width as shown in the plan of drawing 9 . Although two or more tooth part 22a prepared in the plate 22 does not illustrate, it is continuing.

[0037] As the stress relaxation zone 20 formed in the above-mentioned sheet 21 is shown in drawing 10 , it is formed from two or more non-deformed zones 25, two or

more permanent deformation zones 26, and the transition zone 27 in the meantime, and the rib-like portion 28 which upheaved to the permanent deformation zone 26 is formed. The non-deformed zone 25 is formed of tooth part 22a of a plate 22, and narrow width slot 25a of a plate 23, and the permanent deformation zone 26 is formed of tooth part 22a of a plate 22, and tooth part 23a of a plate 23.

[0038] As shown in drawing 10, when the force is applied in the direction of arrow E, the above-mentioned sheep deformation zone 25 is extended to some extent by plastic deformation as shown in drawing 11 and this is exceeded, the rib-like portion 28 of the permanent deformation zone 26 which you were made to deform plastically beforehand as shown in drawing 12 serves as a flat surface, and it has the property which is more nearly inelastic than it. the case where, as for a material suitable in order to form the sheet in which such a property is shown, a sheet 21 consists of a laminate film -- at least one of them -- an elasticity film, for example, a polyolefine, and a line -- it is with a low density polyethylene, a low-density-polyethylene high density polyethylene, polypropylene, etc. to a bird clapper

[0039] Thus, the stress relaxation zone 20 which can be elongated by small pull strength on the sheet 21 which constitutes a handle part 6 is formed. The amount of [ of the stress relaxation zone 20 of the sheet 21 which constitutes a handle part 6 ] periphery is a field which does not elongate though pull strength is added, since it is left behind while it has been raw, or is hard to elongate rather than the stress relaxation zone 20. Moreover, the stress relaxation zone 20 formed by doing in this way can ease the pull strength, and it is made to make the amount of [ of a handle part 6 ] periphery shrunken by elongating, when pull strength is added moreover.

[0040] It is good also as a material which has a certain amount of extensibility for the material of the sheet 21 which constitutes a handle part 6 beforehand. Even in this case, let the stress relaxation zone 20 be the field which can be elongated by small pull strength by giving the above processings to the stress relaxation zone 20 compared with a part for a periphery. Even if you are which case, let the stress relaxation zone 20 of a handle part 6 be the field which can be elongated by small pull strength compared with a part for a periphery.

[0041] The stress relaxation zone 20 established in the above-mentioned handle part 6 divides into the 2-way of the pull strength D1 of the direction of waist, and the pull strength D2 of the direction of the circumference of a foot pull strength D at the time of pulling the conclusion means 7 in the direction which intersects perpendicularly with the side edge of a handle part 6, as shown in drawing 13. That is, since it is not elongated if the amount of periphery does not apply high pull strength compared with the stress relaxation zone 20, the great portion of pull strength by the conclusion means 7 is transmitted considering a part for the periphery as each pull strength D1 and D2, and it acts on Field X and Field Z by the side of a direct absorber. However, since the stress relaxation zone 20 can be elongated also by comparatively small pull strength though the pull strength by the conclusion means 7 acts on the stress relaxation zone 20, and a part for the

periphery of this stress relaxation zone 20 moreover is not elongated, it does not elongate to a limit as the stress relaxation zone 20 shows to drawing 12 . Therefore, by the extensibility of itself, the stress relaxation zone 20 absorbs the pull strength by the conclusion means 7, and does not tell pull strength directly to the field Y by the side of an absorber. Thus, pull strength D of the conclusion means 7 is divided into two component of a force, the pull strength D1 of the direction of waist, and the pull strength D2 of the direction of the circumference of a foot. Direct action of each of such pull strength D1 and D2 is carried out as the force which binds a disposable diaper tight in the direction of the circumference of the waist, and force bound tight in the direction of the circumference of a foot, respectively.

[0042] The conclusion means 7 can adjust distribution of two component of a force, the pull strength D1 of the direction of waist of pull strength D of the conclusion means 7, and the pull strength D2 of the direction of the circumference of a foot, with the position which attaches the anchoring field R in side edge 6a of a handle part 6.

[0043] That is, mostly, when it considers as the position corresponding to middle of the side edge portion of the stress relaxation zone 20 as shows the anchoring field R of the conclusion means 7 to drawing 13 , pull strength D at the time of pulling the conclusion means 7 in the direction of an arrow is divided in the size of the same grade as the 2-way of the pull strength D1 of the direction of waist of a disposable diaper, and the pull strength D2 of the direction of the circumference of a foot.

[0044] Moreover, in the position below the position shown in drawing 13 as the anchoring field R of the conclusion means 7 shows to drawing 14 , pull strength D at the time of pulling the conclusion means 7 in the direction of an arrow has the small pull strength D1 of the direction of waist of a disposable diaper, and it is divided so that the pull strength D2 of the direction of the circumference of a foot may become large.

[0045] Furthermore, in the position above the position shown in drawing 13 as the anchoring field R of the conclusion means 7 shows to drawing 15 , pull strength D at the time of pulling the conclusion means 7 in the direction of an arrow has the large pull strength D1 of the direction of waist of a disposable diaper, and it is divided so that the pull strength D2 of the direction of the circumference of a foot may become small.

[0046] The position and the physical relationship which should be attached of the anchoring field R of the conclusion means 7 for the pull strength by the conclusion means 7 going to a necessary part certainly are explained.

[0047] Fitting location R of the conclusion means 7 is determined by the plot shown in drawing 16 . The fitting location of this conclusion means 7 is important when distributing the pull strength of the conclusion means 7 to the field which the circumference of the waist of a disposable diaper and the circumference of a foot meant effectively and directly.

[0048] In drawing 16 , the lengthwise center line of the disposable diaper 1 is L-L',

and a longitudinal direction center line is H-H'. the near 1st waist field of this center line L-L' and the disposable diaper 1 -- on the other hand -- an intersection with the edge 30 -- P and longitudinal direction center line H-H' of a handle part 6 -- the intersection of soffit marginal 6b located in a side, and the side flap 4 -- Q -- carrying out -- longitudinal direction center line H-H' of Intersection Q to the stress relaxation zone 20 -- the line of the stress relaxation zone 20 prolonged in contact with an edge 30 side on the other hand is set to L1 for the line prolonged in contact with a side from L2 The intersection of a line L2 and side edge 6a of a handle part 6 is shown by B, and the intersection of a line L1 and side edge 6a of a handle part 6 is shown by A. the side edge field located on the other hand from Point A on side edge 6a at the edge 30 -- the 1st side edge field a and Point B -- longitudinal direction center line H-H' -- the side edge field located in a side is shown by the 2nd side edge field b

[0049] Pull strength D of the direction of waist by the conclusion means 7 is distributed in a handle part 6, when side edge 6a of a handle part is started. Drawing 17 shows the situation. In drawing 17, Point M is a certain point included in the anchoring field R of the conclusion means 7, and is in agreement with Point A in this case. When a part of pull strength of the conclusion means 7 is applied to Point M, there are F1, F2, F3, and F4 in the typical component of a force concerning Point M. Although F1 is the component of a force of a disposable diaper which was suitable in the edge 30 direction on the other hand, it is the component of a force which has not turned to the point P describing above. Therefore, this component of a force F1 does not act on Point P directly. F2 is the component of a force which can be transmitted to a line L1 top, and can reach Point P directly. Although F3 may be able to expand the stress relaxation zone 20 toward stress relaxation zone 20 direction, it is component of a force which does not arrive at the field Y shown in drawing 13. F4 is component of a force which goes in the direction of Point Q, and this component of a force can act on the direct point Q.

[0050] certain one in the anchoring field R of the conclusion means 7 -- a side edge 6a top -- setting -- Point M -- further -- longitudinal direction center line H-H', when located in a side (M' shows this point in drawing 17) Since the component of a force which tends toward Point P from this point M' is eased by the stress relaxation zone 20 when located in the field which separated from the 1st side edge field a of jamming (see drawing 16), the component of a force equivalent to the inside F2 of the component of a force of F4 disappears from the above F1. Therefore, the component of a force which carries out direct action to Point P though the anchoring field R of the conclusion means 7 contains point M' is not generated. conversely, the point M -- a side edge 6a top -- setting -- on the other hand -- an edge 30 side, the [ i.e., ], -- when located in 1 side-edge field a (M'' shows drawing 17), there is component of a force which carries out direct action to Point P

[0051] A line L1 is a boundary line for carrying out direct action of the pull strength

of the conclusion means 7 to Point P, and if a certain point in the anchoring field R of the conclusion means 7 is in the 1st side edge field a from the edge 30 from this boundary line, it can carry out direct action of a part of pull strength [ at least ] concerning this point to Point P, so that clearly from the above thing. In the case of the point A described above from the line L2 being determined in relation to Point Q, it becomes symmetrical. That is, a line L2 is a boundary line for carrying out direct action of the pull strength of the conclusion means 7 to Point Q, and if a certain point in the anchoring field R of the conclusion means 7 is in the 1st side edge field a from the edge 30 from this boundary line, it can carry out direct action of a part of pull strength [ at least ] concerning this point to Point Q. Therefore, what is necessary is just to attach the conclusion means 7 so that the anchoring field R of the conclusion means 7 may lap with a part of 2nd side edge field b appointed in relation to the 1st side edge field a appointed in relation to the line L1, and the line L2 in order to make the pull strength of the conclusion means 7 act on the points P and Q on the disposable diaper meant beforehand directly.

[0052] if the pull strength by the conclusion means 7 can be made to act on Point P directly — Point P — lengthwise center line L-L' of a diaper — since it is the point of having been located upwards, it acts so that the conclusion means 7 arranged at both handle parts may pull Point P mutually and may suit, and bolting of the circumference of the waist becomes fitness. Moreover, if the pull strength by the conclusion means 7 can be made to act on Point Q directly, since pull strength is further transmitted from Point Q towards the direction of an absorber 3, bolting of the circumference of a foot will become fitness.

[0053] In other examples, the point P describing above may be an intersection of the side edge 6a of a handle part and the edge 30 which counter as shown in drawing 18. moreover, Point P is shown in drawing 19 — as — lengthwise center line L-L' of the stress relaxation zone 20 — a near flank may be touched and you may be the intersection of the straight line 31 and the edge 30 parallel to this center line L-L'. It is possible to define Point A by drawing the line L1 which results in contact with the stress relaxation zone 20 at side edge 6a of a handle part 6 in any case.

[0054] The anchoring field R of the conclusion means 7 can adjust the pull strength D1 of the direction of waist, and the pull strength D2 of the direction of the circumference of a foot with the rate which laps with the 1st side edge field a and the 2nd side edge field b, respectively.

[0055] The pull strength of the conclusion means 7 increases the rate which carries out direct action to Point P, so that the anchoring field R of the conclusion means 7 laps with the 1st side edge field a mostly. It is because the anchoring field R of the conclusion means 7 can include more points that it can act on the direct point P. A line L1, the edge 30, and the field surrounded by side edge 6a are the direction component-of-a-force intervention zones 42 of the circumference of the waist, and the direction component-of-a-force intervention zone of the circumference of the waist in side edge 6a is the 1st side edge field a. And as long as a part of conclusion

means 7 is attached in this 1st side edge field a side, direct action of the pull strength of the conclusion means 7 can be carried out to Point P, and the component of a force distributed to the direction component-of-a-force intervention zone 42 of the circumference of the waist becomes large, so that the anchoring field R of the conclusion means 7 laps with the 1st side edge field a mostly.

[0056] On the contrary, the pull strength of the conclusion means 7 increases the rate which carries out direct action to Point Q, so that the anchoring field R of the conclusion means 7 laps with the 2nd side edge field b mostly. It is because the anchoring field R of the conclusion means 7 can include more points that it can act on the direct point Q. A line L2, soffit marginal 6b of a handle part 6, and the field surrounded by side edge 6a are the direction component-of-a-force intervention zones 43 of the circumference of a foot, and the direction component-of-a-force intervention zone of the circumference of a foot in side edge 6a is the 2nd side edge field b. And as long as a part of conclusion means 7 is attached in this 2nd side edge field b side, direct action of the pull strength of the conclusion means 7 can be carried out to Point Q, and the component of a force distributed to the direction component-of-a-force intervention zone 43 of the circumference of a foot becomes large, so that the anchoring field R of the conclusion means 7 laps with the 2nd side edge field b mostly.

[0057] The anchoring field R to the handle part 6 of the conclusion means 7 is the position where the conclusion means 7 includes Point A and Point B, as shown in drawing 20, and if Point A and Point B are in regular intervals from the crosswise center line of the conclusion means 7, the portion which the 1st side edge field a of the conclusion means 7 and the 2nd side edge field b occupy has it. [ of the same grade ] Therefore, the pull strength which component of a force almost of the same grade is distributed to the direction component-of-a-force intervention zone 42 of waist and the direction component-of-a-force intervention zone 43 of the circumference of a foot, as a result is applied to Point P and Point Q becomes almost equivalent. As furthermore shown in drawing 21, the component of a force more certainly distributed to each intervention zones 42 and 43 can be equated by arranging the center line of the conclusion means 7 on the line 32 which bisects the angle which each lines L1 and L2 along which it passes in contact with the stress relaxation zone 20 cross.

[0058] Moreover, distribution of the pull strength to each intervention zone can be changed by changing the rate to which the anchoring field R to the handle part 6 of the conclusion means 7 laps with the 1st side edge field a and the 2nd side edge field b.

[0059] That is, since the rate which the anchoring field R of the conclusion means 7 laps with the 1st side edge field a completely, and laps with the 1st side edge field a when there is nothing as a part of 2nd side edge field b is larger if it is a pile as the fitting location to the handle part 6 of the conclusion means 7 shows drawing 22,

bigger component of a force is distributed to the way of the circumference component-of-a-force intervention zone 42 of the waist.

[0060] On the contrary, since the rate which the anchoring field R of the conclusion means 7 laps with the 2nd side edge field b completely, and laps with the 2nd side edge field b when there is nothing as a part of 1st side edge field a is larger if it is a pile as the fitting location to the handle part 6 of the conclusion means 7 shows drawing 23 , bigger component of a force is distributed to the way of the circumference component-of-a-force intervention zone 43 of a foot.

[0061] the above — the anchoring field R of the conclusion means 7 does not necessarily need to be included to one side edge field that there should just be a difference in short at each lap rate in the case of which

[0062] Drawing 24 and drawing 25 are drawings showing the relation between the 1st side edge field a by the relative position of a handle part 6 and the stress relaxation zone 20, and the 2nd side edge field b.

[0063] In the example of drawing 24 , the configuration which unlike the configuration of the stress relaxation zone 20 shown by drawing 16 the configuration of the stress relaxation zone 20 expanded to lengthwise, and approximated to the reliance square is carried out. In this example, the line L1 prolonged in contact with the stress relaxation zone 20 from Point P and the line L2 prolonged in contact with the stress relaxation zone 20 from Point Q have resulted in side edge 6a of a handle part 6, without crossing on the way. the 1st side edge field [ in / side edge 6a / as shown in drawing 24 ] a — Point A — an edge 30 side zone — it is — the 2nd side edge field b — Point B — longitudinal direction center line H-H' — it is a side zone Therefore, the zone 33 which does not participate in the direction component-of-a-force intervention zone 42 of waist and the direction component-of-a-force intervention zone 43 of the circumference of a foot is formed among each side edge fields a and b. In order to concentrate the pull strength of the conclusion means 7 on waist and \*\*\*\* directly, it must be arranged in the position where the anchoring field R of the conclusion means 7 includes the 1st side edge field a and the 2nd side edge field b ranging over a zone 33. That is, the pull strength of a conclusion means is directly centralized for the anchoring field R of the conclusion means 7 on a necessary part by the part and heavy bird clapper of each side edge fields a and b also in this case.

[0064] Although the line L1 prolonged in contact with the stress relaxation zone 20 from Point P and the line L2 prolonged in contact with the stress relaxation zone 20 from Point Q crossed on the way like drawing 16 and it has resulted in side edge 6a of a handle part 6 in the example of drawing 25 , unlike drawing 16 , the line L2 crosses on the extension wire of side edge 6a of a handle part 6. however — a point — B — a handle part — six — from — having separated — being fictitious — a point — it is — since — the — two — a side edge — a field — b — being actual — a handle part — six — a side edge — six — a — a lap — it is — b — ' — a field — becoming . Also in this case, the anchoring field R of the conclusion means 7 has

just lapped with the 1st side edge field a and a part of 2nd side edge field b'. That is, even if it is the case where lines L1 and L2 do not actually cross side edge 6a, each side edge fields a and b can be determined by asking for an intersection with the extension wire of the side edge. therefore, this application specification \*\*\*\* — when each lines L1 and L2 call it "the point of crossing a side edge", the meaning of "the point of crossing the extension wire of a side edge" is included

[0065] Drawing 26 shows the example which makes the configuration which made circular margo-inferior 6b of a handle part 6, and a line L2 touches the circular portion S of soffit marginal 6b of a handle part 6, is prolonged in contact with the stress relaxation zone 20, and crosses at side edge 6a of a handle part 6, and Point B. Therefore, the force concerning Point B can be transmitted to a line L2 top, and can get across to an absorber 3 side. However, in having drawn the line 34 which touches the stress relaxation zone 20 from the root portion Q of a handle part 6 like drawing 16, even if the force concerning intersection B' of a line 34 and side edge 6a is transmitted to a line 34 top, it will be omitted by margo-inferior 6b of a handle part 6.

[0066] In this case, the 1st side edge field a serves as the direction top portion of an arrow from the point A of side edge 6a of a handle part 6, and the 2nd side edge field b serves as the direction bottom portion of an arrow from the point B of side edge 6a of a handle part 6. The anchoring field R of the conclusion means 7 needs to lap at least with a part of zone c between the point A of side edge 6a of a handle part 6, and Point B.

[0067] In the example which drawing 27 or drawing 30 shows other examples of this invention, and is shown in drawing 27 or drawing 30, only the anchoring directions of an example and a conclusion means shown in drawing 1 differ.

[0068] In the example shown in drawing 27 and drawing 28, the conclusion means 7 is arranged at the angle of  $0 < \theta < 45$  degrees to the edge of a disposable diaper in the slanting upper part.

[0069] Since the direction of the conclusion means 7 of tension has turned to the direction of the circumference of a foot as compared with what made component of a force of the hauling force D1 of the direction of waist, and the hauling force D2 of the direction of the circumference of a foot of the same grade as the conclusion means 7 pulled the lateral conclusion means 7 shown by the dotted line in a longitudinal direction and showed it to drawing 13 in the fitting location shown in drawing 27 as a solid line, the hauling force D2 of the direction of the circumference of a foot is However, since the conclusion means 7 is a position including the 1st side edge field a, the hauling force D1 of the direction of waist is secured.

[0070] As compared with component-of-a-force distribution of the hauling force D1 of the direction of waist which it shows by drawing 27 since the portion which the 2nd side edge field b occupies in the fitting location which shows the conclusion means 7 to drawing 28 is larger than the portion of the 1st side edge field a to occupy, and the hauling force D2 of the direction of the circumference of a foot, the



hauling force D1 of the direction of waist becomes [ the hauling force D2 of the direction of the circumference of a foot ] large small further

[0071] In the example shown in drawing 29 and drawing 30 , the conclusion means 7 is arranged at the angle of zero < theta < 45 degrees to the edge of a disposable diaper at the slanting lower part.

[0072] The conclusion means 7 in the fitting location shown in drawing 29 as a solid line Pull the lateral conclusion means 7 shown by the dotted line in a longitudinal direction, and it compares with what made the hauling force D1 of the direction of waist, and the hauling force D2 of the direction of the circumference of a foot component of a force of the same grade as shown in drawing 13 . Since the direction of tension of the conclusion means 7 has turned to the direction of waist, the hauling force D1 of the direction of waist is set as larger component of a force than the hauling force D2 of the direction of the circumference of a foot. However, since the conclusion means 7 is a position including the 2nd side edge field b, the hauling force D2 of the direction of the circumference of a foot is secured.

[0073] As compared with distribution of the hauling force D1 of the direction of waist which it shows by drawing 29 since the portion which the 1st side edge field a occupies in the fitting location which shows the conclusion means 7 to drawing 30 is larger than the portion of the 2nd side edge field b to occupy, and the hauling force D2 of the direction of the circumference of a foot, further, the hauling force D1 of the direction of waist is large, and the hauling force D2 of the direction of the circumference of a foot is

[0074] Next, drawing 31 or drawing 32 shows other suitable examples.

[0075] <A HREF="/Tokujitu/tjitemdrw.ipdl?N0000=239&N0500=1E\_M/??

<>9=:6=///&N0001=250&N0552=9&N0553=000017" TARGET="tjitemdrw"> drawing 16 It faces determining the 2nd side edge field b, and is made to draw the line L2 which touches the stress relaxation zone 20 on the basis of the edge 36 of the leg elastic member 5 to having drawn the line L2 on the basis of a part of soffit marginal 6b of a handle part 6 in the case of drawing 31 . In this case, the pull strength concerning Point B is designed so that it may act on the edge 36 of the direct leg elastic member 5 so that clearly from drawing 31 . The edge 36 of the leg elastic member 5 can be made into the center of the leg elastic member 5 as shown in drawing 31 , and it can also be based on the inside edge 37 or the outside edge 38. Even if it is which case, the 2nd side edge field b for the pull strength of the conclusion means 7 acting on the direct leg elastic member 5 can be set up.

[0076] Moreover, drawing 16 faces determining the 1st side edge field a, and it is made to draw the line L1 which touches the stress relaxation zone 20 on the basis of the edge 39 of the lumbar part elastic member 35 arranged at the edge 30 close-attendants side to having drawn the line L1 on the basis of the intersection P of lengthwise center line L-L' and the edge 30 in the case of drawing 32 . In this case, the pull strength concerning Point A is designed so that it may act on the edge 39 of the direct lumbar part elastic member 35 so that clearly from drawing 32 . The edge

39 of the lumbar part elastic member 35 can be made into the center of the lumbar part elastic member 35 as shown in drawing 32 , and it can also be based on the outside edge 40 or the inside edge 41. Even if it is which case, the 1st side edge field a for the pull strength of the conclusion means 7 acting on the direct lumbar part elastic member 35 can be set up.

[0077] The conclusion means 7 by which inclination arrangement is carried out at a handle part 6 is turned [ in the mid-position ] up like drawing 33 at a handle part side, on the occasion of use, as shown at drawing 34 , it is turned [ \*\*\*\* / making it project from a handle part ] up by making a whole configuration into the shape of a fork in the mid-position at a handle part side, and on the occasion of use, it can also consider as a configuration which is projected from a handle part. Thus, the conclusion means 7 does not project outside a handle part 6 by bending a part for a point from the center section of the conclusion means 7 to a handle part side. As shown in drawing 34 , with the conclusion means 7 which made the whole configuration the shape of a fork, the pull strength of the conclusion means 7 can be more certainly turned in the direction of waist, and the direction of the circumference of a foot.

[0078] In addition, since the stress relaxation zone 20 established in the handle part 6 is an elastic exertion field and it deforms easily according to the configuration when the field is equivalent to a hipbone etc., its amenity of a wearer will improve.

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[Translation done.]

**\* NOTICES \***

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3.In the drawings, any words are not translated.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The development of the disposable diaper by this invention.

[Drawing 2] The cross section of the absorber portion of the disposable diaper by this invention.

[Drawing 3] The cross section showing an example of a handle part.

[Drawing 4] Drawing showing the modification of the stress relaxation zone of the

disposable diaper by this invention.

[Drawing 5] Drawing showing the modification of the stress relaxation zone of the disposable diaper by this invention.

[Drawing 6] Drawing showing the modification of the stress relaxation zone of the disposable diaper by this invention.

[Drawing 7] Drawing showing the modification of the stress relaxation zone of the disposable diaper by this invention.

[Drawing 8] Drawing showing the forming means of a stress relaxation zone.

[Drawing 9] The plan of the plate portion of the forming means of drawing 8 .

[Drawing 10] The stress relaxation zone fabricated by the forming means of drawing 8 is a perspective diagram a part.

[Drawing 11] Drawing showing the intermediate-stage story which pulled the middle film with which drawing 10 was fabricated.

[Drawing 12] Drawing showing the stage which pulled the middle film with which drawing 10 was fabricated.

[Drawing 13] Drawing showing the state where the tensile stress of the conclusion means of the disposable diaper by this invention distributes almost equally to the direction of waist, and the direction of the circumference of a foot.

[Drawing 14] Drawing showing the state where the direction of waist is [ the tensile stress of the conclusion means of the disposable diaper by this invention ] small, and the direction of the circumference of a foot roughly distributes.

[Drawing 15] Drawing showing the state where the direction of waist is [ the tensile stress of the conclusion means of the disposable diaper by this invention ] large, and the direction of the circumference of a foot distributes small.

[Drawing 16] Drawing showing the 1st side edge field a and the 2nd side edge field b in a handle part.

[Drawing 17] Drawing having shown signs that the pull strength of a conclusion means distributed.

[Drawing 18] Drawing showing other examples for determining the 1st side edge field.

[Drawing 19] Drawing showing other examples for determining the 1st side edge field.

[Drawing 20] Drawing showing the state where the portion which the 1st side edge field a of a handle part occupies, and the portion which the 2nd side edge field b occupies attached the conclusion means in the equal position.

[Drawing 21] Drawing showing the state where it has arranged on the line which bisected the angle which the 1st line and the 2nd line cross in the center line of a conclusion means.

[Drawing 22] Drawing showing the state where the conclusion means was attached in the position where the portion which the portion which the 2nd side edge field b occupies is small, and the 1st side edge field a occupies is large.

[Drawing 23] Drawing showing the state where the conclusion means was attached in the position where the portion which the portion which the 2nd side edge field b occupies is large, and the 1st side edge field a occupies is small.

[Drawing 24] Drawing showing the 1st side edge field a and the 2nd side edge field b in the modification of the stress relaxation zone of a disposable diaper by this invention.

[Drawing 25] Drawing showing the 1st side edge field a and the 2nd side edge field b in the modification of the stress relaxation zone of a disposable diaper by this invention.

[Drawing 26] Drawing showing the 1st side edge field a and the 2nd side edge field b in the modification of the handle part of a disposable diaper by this invention.

[Drawing 27] Drawing showing the state where the conclusion means in which other examples of the disposable diaper by this invention carried out the upper part inclination was attached in the position equivalent to drawing 20 .

[Drawing 28] Drawing showing the state where the conclusion means in which other examples of the disposable diaper by this invention carried out the upper part inclination was attached in the position equivalent to drawing 23 .

[Drawing 29] Drawing showing the state where the conclusion means in which other examples of the disposable diaper by this invention carried out declination was attached in the position equivalent to drawing 20 .

[Drawing 30] Drawing showing the state where the conclusion means in which other examples of the disposable diaper by this invention carried out declination was attached in the position equivalent to drawing 22 .

[Drawing 31] Drawing showing other examples for determining the 2nd side edge field.

[Drawing 32] Drawing showing other examples for determining the 1st side edge field.

[Drawing 33] Drawing showing the modification of the conclusion means toward which the disposable diaper by this invention inclined.

[Drawing 34] Drawing showing the modification of the conclusion means toward which the disposable diaper by this invention inclined.

[Description of Notations]

1 Disposable Diaper

3 Absorber

6 Handle Part

7 Conclusion Means

20 stress relaxation zones

D Hauling force

D1 The direction pull strength of waist

D2 The direction pull strength of the circumference of a foot

The 1st side edge field

b The 2nd side edge field

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[Translation done.]

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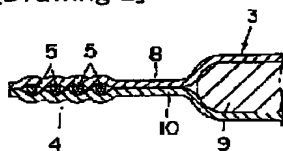
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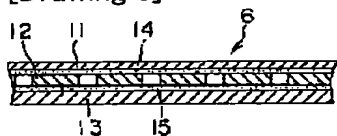
## DRAWINGS

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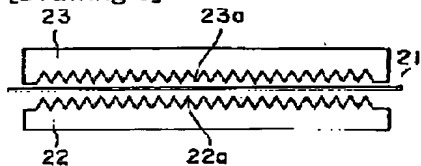
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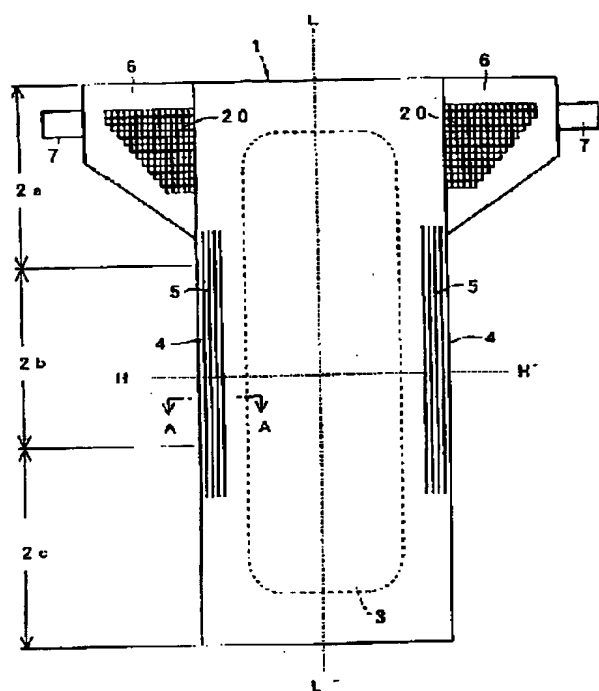
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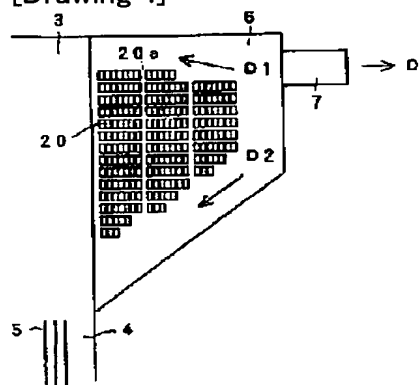
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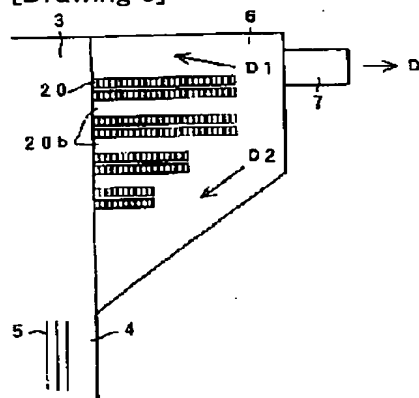
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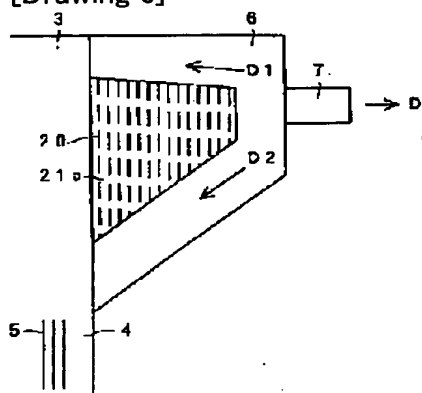
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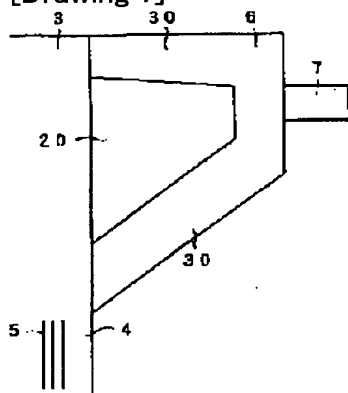
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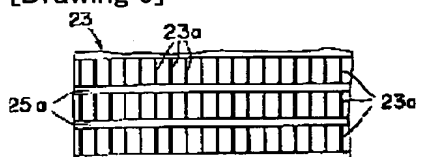
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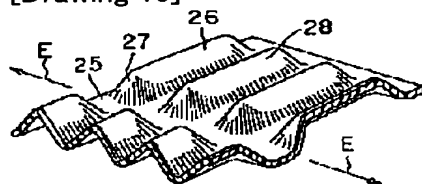
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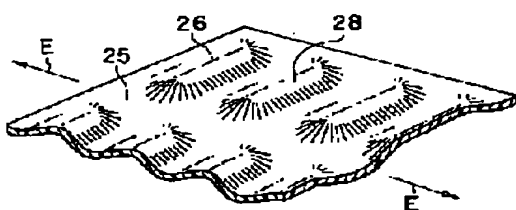
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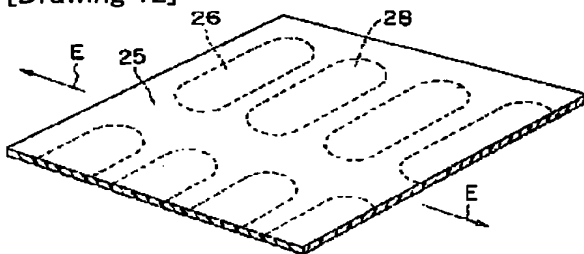
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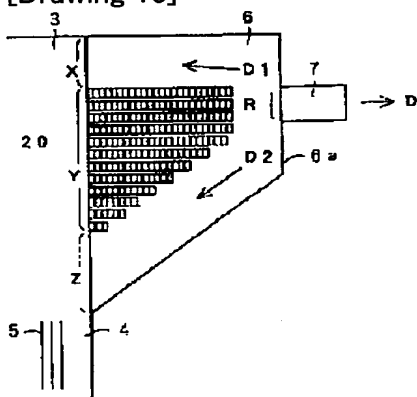
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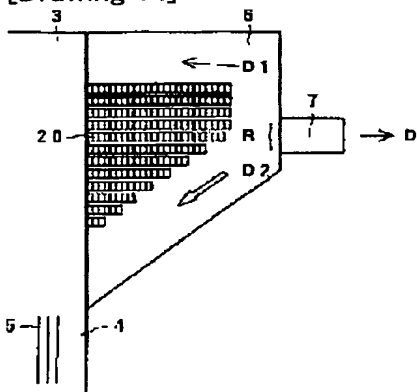
[Drawing 12]



[Drawing 13]

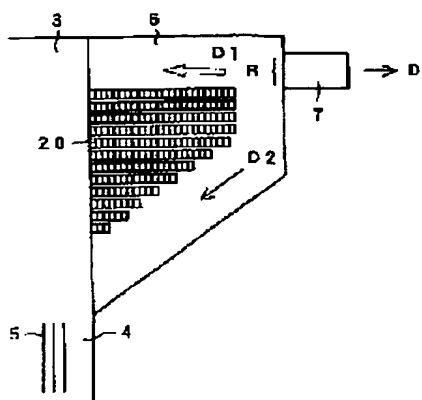


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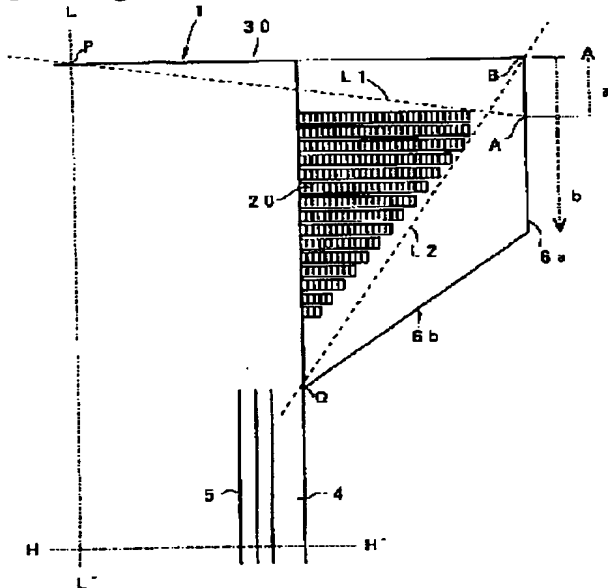


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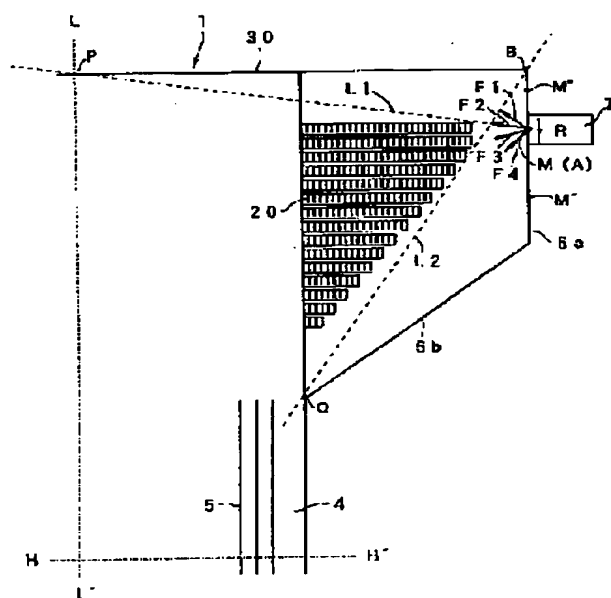




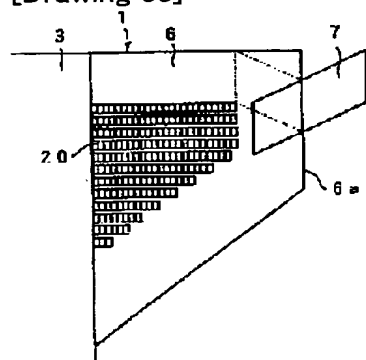
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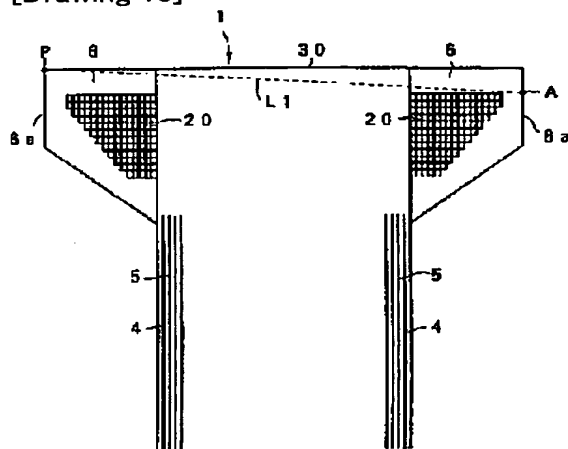
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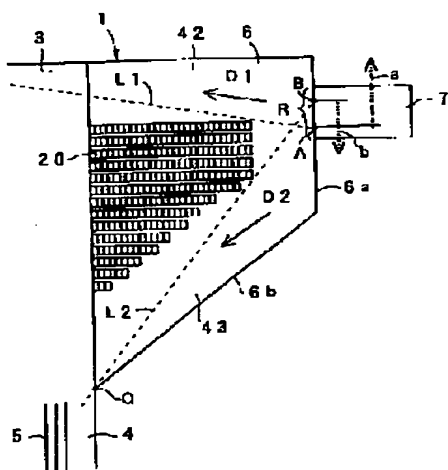
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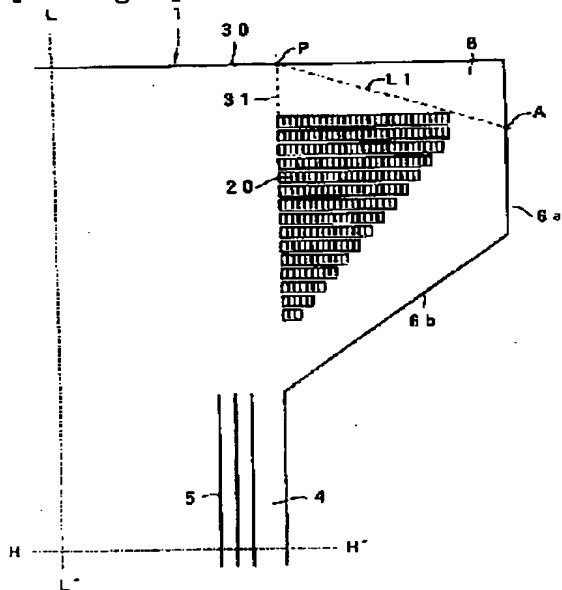
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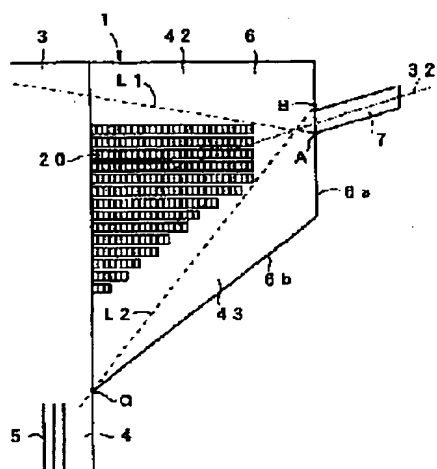
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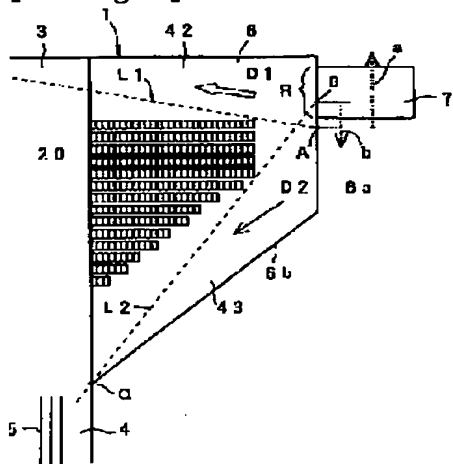
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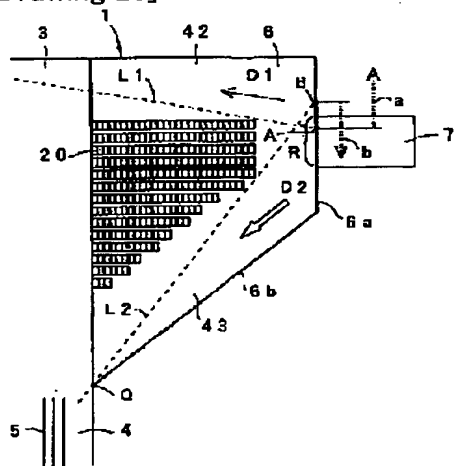
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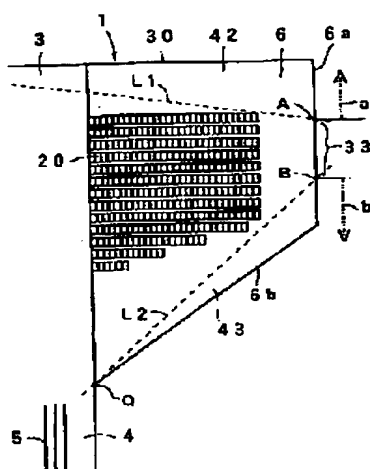
[Drawing 22]



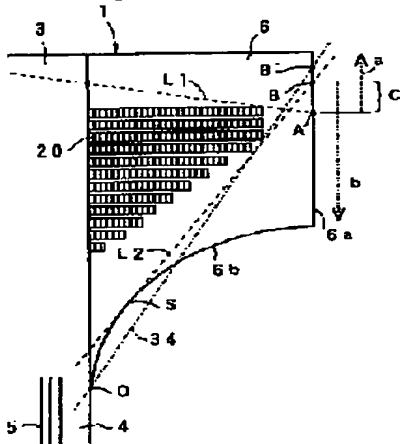
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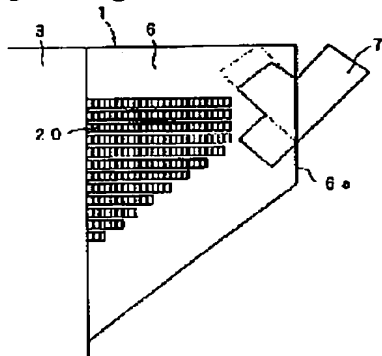
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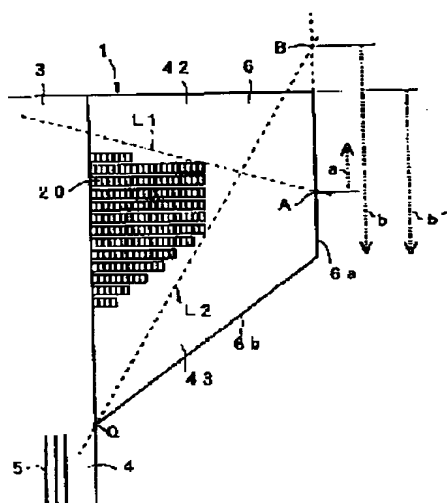
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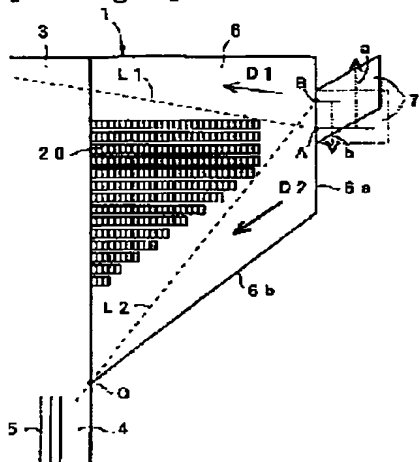
[Drawing 34]



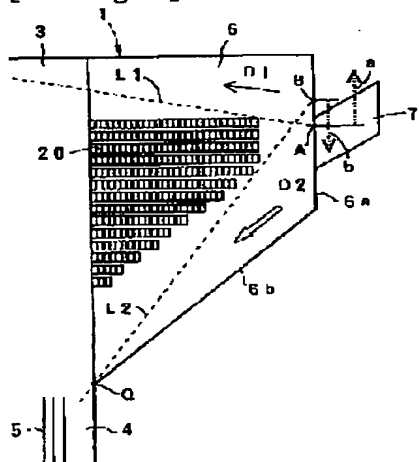
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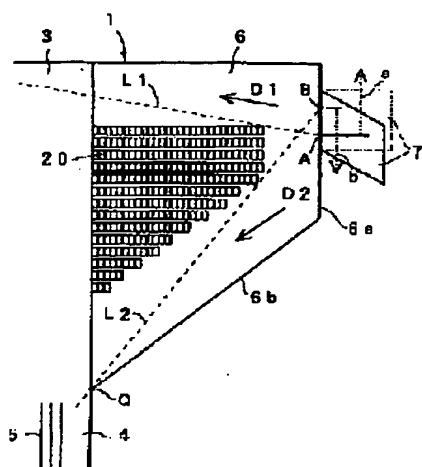
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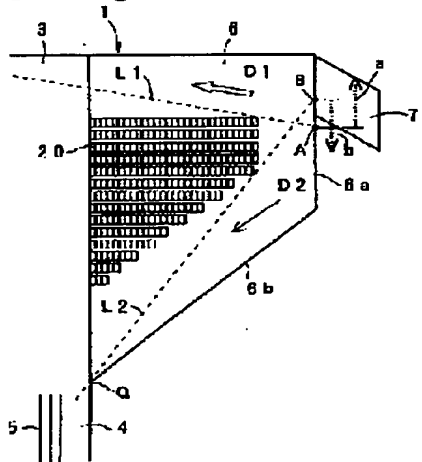
[Drawing 28]



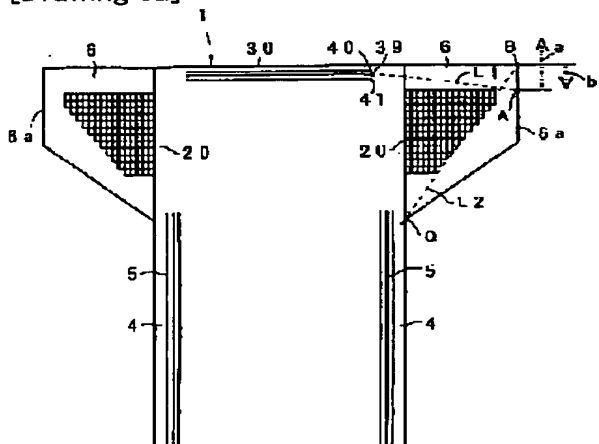
[Drawing 29]



[Drawing 30]



[Drawing 32]







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最終頁に続く

(54) 【発明の名称】 使い捨ておむつ

1

(57) 【特許請求の範囲】

【請求項 1】 トップシートとバックシートの上に吸収性  
コアを有し着用者の臀部を覆うように配置される吸収体  
と、この吸収体の長手方向端部に沿って配置された一対  
の耳部と、各耳部の側縁に設けられた一本の締結手段  
と、一対の端縁と、縦方向中心線と、横方向中心線を有  
する使い捨ておむつにおいて、上記耳部の周辺部分を除  
いた領域に周辺部分より引張り応力が小さい応力緩和区  
域を設け、使い捨ておむつの縦方向中心線と一方端縁の  
交点である使い捨ておむつの一方端縁の一部から応力  
緩和区域に接する第 1 線が耳部の側縁と交わる点より上  
記一方端縁側に位置する耳部側縁を第 1 側縁領域とし、使  
い捨ておむつの横方向中心線側の耳部端縁の一部から  
応力緩和区域に接する第 2 線が耳部の側縁と交わる点より  
上記横方向中心線側に位置する耳部側縁を第 2 側縁領域

2

とし、締結手段が、少なくとも第 1 側縁領域の一部と第  
2 側縁領域の一部に重なるように取付けられていること  
を特徴とする使い捨ておむつ。

【請求項 2】 上記使い捨ておむつの一方端縁の一部は、  
対向する耳部の側縁と上記使い捨ておむつの一方端縁と  
の交点であることを特徴とする請求項 1 記載の使い捨て  
おむつ。

【請求項 3】 上記応力緩和区域は、複数の未変形区域と  
複数の変形区域とを含むことを特徴とする請求項 1 記載  
の使い捨ておむつ。

【請求項 4】 上記周辺部分は非伸張性であり、上記応力  
緩和区域は伸張性であることを特徴とする請求項 3 記載  
の使い捨ておむつ。

【請求項 5】 上記耳部は非伸張性の材料からなり、上記  
応力緩和区域は応力が加えられた時に伸張できるように

10

非伸張性の材料に加工を施されたものであり、加工された応力緩和区域は周辺部分を縮ませることがないことを特徴とする請求項4記載の使い捨ておむつ。

【請求項6】上記耳部は、液不透過性のフィルムと、多孔性の成形フィルムと、不織布との積層物からなることを特徴とする請求項5記載の使い捨ておむつ。

【請求項7】上記周辺部分は高応力によって伸張可能であり、上記応力緩和区域は低応力によって伸張可能であることを特徴とする請求項1記載の使い捨ておむつ。

【請求項8】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を異ならせたことを特徴とする請求項1記載の使い捨ておむつ。

【請求項9】上記締結手段の耳部への取付け領域が上記第2側縁領域と重なる割合は、上記取付け領域が上記第1側縁領域と重なる割合より大きいことを特徴とする請求項8記載の使い捨ておむつ。

【請求項10】上記締結手段の耳部への取付け領域は、第2側縁領域内に含まれ、かつ第1側縁領域の一部と重なることを特徴とする請求項9記載の使い捨ておむつ。

【請求項11】上記締結手段の耳部への取付け領域が上記第1側縁領域と重なる割合は、上記取付け領域が上記第2側縁領域と重なる割合より大きいことを特徴とする請求項8記載の使い捨ておむつ。

【請求項12】上記締結手段の耳部への取付け領域は、第1側縁領域内に含まれ、かつ第2側縁領域の一部と重なることを特徴とする請求項11記載の使い捨ておむつ。

【請求項13】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を同等にしたことを特徴とする請求項1記載の使い捨ておむつ。

【請求項14】上記締結手段は、上記第1線と第2線を二等分する線上に締結手段の中心線が配置されるように耳部の側縁に取付けられたことを特徴とする請求項13記載の使い捨ておむつ。

【請求項15】縦方向中心線と、一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、第1腰領域に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、使い捨ておむつの縦方向中心線と一方端縁の交点である使い捨ておむつの第1腰領域に近接した端縁の一部から応力緩和区域に接して耳部の側縁に至る第1線を設定し、第1線を境界として上記端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記使い捨ておむつの端縁の一部に直接作用する腰回り方向分力関

与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、使い捨ておむつの股領域側に位置する耳部端縁の一部から応力緩和区域に接して耳部の側縁に至る第2線を設定し、第2線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記耳部端縁の一部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段が、締結手段耳部への取付け領域が少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように、耳部に取付けられていることを特徴とする使い捨ておむつ。

【請求項16】上記使い捨ておむつの一方端縁の一部は、対向する耳部の側縁と上記使い捨ておむつの一方端縁との交点であることを特徴とする請求項15記載の使い捨ておむつ。

【請求項17】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を異ならせ、各分力関与区域に直接作用する締結手段による引張り力を変化させたことを特徴とする請求項15記載の使い捨ておむつ。

【請求項18】上記締結手段による引張り力が、使い捨ておむつの端縁の一部に直接作用する腰回り分力関与区域より、耳部端縁の一部に直接作用する脚回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項17記載の使い捨ておむつ。

【請求項19】上記締結手段の耳部への取付け領域が上記第2側縁領域と重なる割合は、上記取付け領域が上記第1側縁領域と重なる割合より大きいことを特徴とする請求項18記載の使い捨ておむつ。

【請求項20】上記締結手段の耳部への取付け領域は、第2側縁領域内に含まれ、かつ第1側縁領域の一部と重なることを特徴とする請求項19記載の使い捨ておむつ。

【請求項21】上記締結手段が、耳部の側縁に、上記横方向中心線に対して上記第1腰領域に近接した端縁方向に向けて0度< $\theta$ <45度の角度範囲で取付けられていることを特徴とする請求項20の使い捨ておむつ。

【請求項22】上記締結手段による引張り力が、耳部端縁の一部に直接作用する脚回り分力関与区域より、使い捨ておむつの端縁の一部に直接作用する腰回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項17記載の使い捨ておむつ。

【請求項23】上記締結手段の耳部への取付け領域が上記第1側縁領域と重なる割合は、上記取付け領域が上記第2側縁領域と重なる割合より大きいことを特徴とする請求項22記載の使い捨ておむつ。

【請求項24】上記締結手段の耳部への取付け領域は、第1側縁領域内に含まれ、かつ第2側縁領域の一部と重なることを特徴とする請求項23記載の使い捨ておむつ。

【請求項25】上記締結手段が、耳部の側縁に、上記横方向中心線に対して上記股領域に向けて0度< $\theta$ <45度の角度範囲で取付けられていることを特徴とする請求項24の使い捨ておむつ。

【請求項26】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を同等にし、上記締結手段による引張り力が、各分力関与区域に同等に配分されるように上記締結手段を取付けたことを特徴とする請求項15記載の使い捨ておむつ。

【請求項27】上記締結手段は、上記第1線と第2線を二等分する線上に締結手段の中心線が配置されるように耳部の側縁に取付けられたことを特徴とする請求項26記載の使い捨ておむつ。

【請求項28】一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、股領域における吸収体の縦方向側縁に沿って配置された脚部弾性手段と、第1腰領域に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、

上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、使い捨ておむつの第1腰領域に近接した端縁の一部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記使い捨ておむつの端縁の一部に直接作用する腰回り方向分力関与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、脚部弾性手段の第1腰領域側の端部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記脚部弾性手段の端部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段が、締結手段の耳部への取付け領域が少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように、耳部に取付けられていることを特徴とする使い捨ておむつ。

【請求項29】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を異ならせ、各分力関与区域に直接作用する締結手段による引張り力を変化させたことを特徴とする請求項28記載の使い捨ておむつ。

【請求項30】上記締結手段による引張り力が、使い捨ておむつの端縁の一部に直接作用する腰回り分力関与区域より、脚部弾性手段の端部に直接作用する脚回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項29記載の使い捨ておむつ。

【請求項31】上記締結手段による引張り力が、上記脚部弾性手段の端部に直接作用する脚回り分力関与区域より、使い捨ておむつの端縁の一部に直接作用する腰回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項29記載の使い捨ておむつ。

【請求項32】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を同等にし、上記締結手段による引張り力が、各分力関与区域に同等に配分されるように上記締結手段を取付けたことを特徴とする請求項28記載の使い捨ておむつ。

【請求項33】一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、第1腰領域における吸収体の横方向側縁に沿って配置された腰部弾性手段と、第1腰領域に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、腰部弾性手段の耳部側端部からこの端部側の応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として使い捨ておむつの第1腰領域に近接した端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記腰部弾性手段の端部に直接作用する腰回り方向分力関与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、使い捨ておむつの股領域側に位置する耳部端縁の一部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記耳部端縁の一部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段が、締結手段の耳部への取付け領域が少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように、耳部に取付けられていることを特徴とする使い捨ておむつ。

【請求項34】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を異ならせ、各分力関与区域に直接作用する締結手段による引張り力を変化させたことを特徴とする請求項33記載の使い捨ておむつ。

【請求項35】上記締結手段による引張り力が、腰部弾性手段の端部に直接作用する腰回り分力関与区域より、耳部端縁の一部に直接作用する脚回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項34記載の使い捨ておむつ。

【請求項36】上記締結手段による引張り力が、耳部端縁の一部に直接作用する脚回り分力関与区域より、腰部

弾性手段の端部に直接作用する腰回り分力関与区域に多く配分されるように上記締結手段を取付けたことを特徴とする請求項34記載の使い捨ておむつ。

【請求項37】上記締結手段の耳部への取付け領域が第1側縁領域と重なる割合と、上記取付け領域が第2側縁領域と重なる割合を同等にし、上記締結手段による引張り力が、各分力関与区域に同等に配分されるように上記締結手段を取付けたことを特徴とする請求項33記載の使い捨ておむつ。

【請求項38】一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、股領域における吸収体の縦方向側縁に沿って配置された脚部弾性手段と、第1腰領域における吸収体の横方向側縁に沿って配置された腰部弾性手段と、第1腰領域に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、腰部弾性手段の耳部側端部からこの端部側の応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として使い捨ておむつの第1腰領域に近接した端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記腰部弾性手段の端部に直接作用する腰回り方向分力関与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、脚部弾性手段の第1腰領域側の端部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記脚部弾性手段の端部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段が、締結手段の耳部への取付け領域が少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように、耳部に取付けられていることを特徴とする使い捨ておむつ。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、吸収体の長手方向端部に沿って配置された一対の耳部の側縁に設けられた1本の締結手段による引張り力を、腰周り方向および脚周り方向に効果的に分散して、着用者の脚周りおよび腰周りからの液洩れを防ぐとともに着用者に快適性を与える使い捨ておむつに関する。

【0002】

【従来の技術】一般に使用されている使い捨ておむつは、トップシートとバックシートの間に吸収性コアを有し着用者の股部を覆うように配置される吸収体と、吸収体の長手方向端部に沿って使い捨ておむつの腰周りに配置された一対の耳部と、各耳部の側縁に設けられた締結

手段を備えて構成されている。

【0003】上記使い捨ておむつにおいては、使用に際して、おむつ本体を通常の方法で着用者に装着し、耳部に設けた締結手段を、締結手段と反対側の使い捨ておむつの腰周りに固定することで着用者に取付けるようにしている。使い捨ておむつにおいては、着用者に装着した際に、着用者の腰周りと脚周りの両方でフィットし、着用時に、特に、脚部および腰部からの液洩れを防ぐことが要求されている。

【0004】しかし、1本の締結手段を耳部の側縁に設けた形式の使い捨ておむつでは、おむつ本体を着用者に装着する際に、締結手段の引張り力を着用者の腰周りと脚周りの両方に効果的に集中させるのが困難であった。つまり、使い捨ておむつを着用者の腰周りにぴったりフィットするように取付けると、着用者の脚周りに隙間ができてしまい、使用中に脚部から液洩れが生じることがあり、また、これとは逆に、着用者の脚周りにフィットするように取付けると、着用者の腰周りに隙間ができてしまい、着用者の腰周りにぴったりとフィットできないという難点があった。

【0005】このような課題を解決し、着用者の脚周りおよび腰周りでのフィット性を向上するために種々の改良がなされてきた。

【0006】Coatesらに与えられたアメリカ特許第4,680,030号、Aledoらに与えられたアメリカ特許第4,850,988号、Ahrに与えられたアメリカ特許第4,826,499号、Schreinerに与えられたアメリカ特許第4,937,887号は、使い捨ておむつの腰周りに配置された一対の耳部のそれぞれに、2本の締結手段を取付けることによって脚周り、腰周りの両方においてフィット性を向上できる技術を開示している。

【0007】しかし、各耳部に取付けられた2本の締結手段をそれぞれ操作する必要がある、締結手段の取付け時の操作性において改良の余地が残されていた。

【0008】このような欠点を解決したO'Learyらに与えられたアメリカ特許第4,911,702号、Woodらに与えられたアメリカ特許第4,857,067号では一本の締結手段で腰周りと脚周りに効果的に、締結手段の引張り力を集中させる技術が開示されている。

【0009】しかしながら、これらは一本の締結手段を使い捨ておむつの耳部に取付けた時に、その引張り力を効果的にしかも直接的に腰周りと脚周りに集中させることを可能とした締結手段の取付け位置について言及していない。また、締結手段による引張り力を腰周りと脚周りとに配分する割合を意図的に変化させた締結手段の取付け位置について言及していない。

【0010】本発明の目的は、締結手段の引張り力を使い捨ておむつの脚周りと腰周りに効果的にしかも直接的

に集中させることができる位置に取付けられた締結手段を有する使い捨ておむつを提供することである。

【0011】本発明の他の目的は、締結手段の引張り力が脚周りと腰周りに意図した割合で配分されるような位置に締結手段が取付けられた使い捨ておむつを提供することである。

【0012】本発明の他の目的は、使い捨ておむつの脚周りに設けられた脚部弾性部材と腰周りとに締結手段の引張り力を効果的にしかも直接的に集中させることができる位置に取付けられた締結手段を有する使い捨ておむつを提供することである。

【0013】本発明の他の目的は、使い捨ておむつの脚周りと使い捨ておむつの腰周りに設けられた腰部弾性部材とに締結手段の引張り力を効果的にしかも直接的に集中させることができる位置に取付けられた締結手段を有する使い捨ておむつを提供することである。

【0014】

【課題を解決するための手段】本発明の使い捨ておむつは、トップシートとバックシート間に吸収性コアを有し着用者の股部を覆うように配置される吸収体と、この吸収体の長手方向端部に沿って配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段と、一対の端縁と、横方向中心線を有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、使い捨ておむつの一方端縁の一部から応力緩和区域に接する第1線が耳部の側縁と交わる点より上記一方端縁側に位置する耳部側縁を第1側縁領域とし、使い捨ておむつの横方向中心線側の耳部端縁の一部から応力緩和区域に接する第2線が耳部の側縁と交わる点より上記横方向中心線側に位置する耳部側縁を第2側縁領域とし、締結手段の耳部への取付け領域が、少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように取付けられているものである。

【0015】上記締結手段の取付け領域と第1側縁領域との重なり割合と、取付け領域と第2側縁領域との重なり割合を調整できる。この各重なり割合は異ならせてもよいし、同等に設定するようにしてもよい。各重なり割合は、取付け領域が第1側縁領域と重なる割合の方を、第2側縁領域との重なり割合より大きくしてもよいし、第2側縁領域との重なり割合の方を、第1側縁領域との重なり割合より大きくしてもよい。

【0016】さらに上記締結手段は、耳部側縁にある傾きをもって取付けることもできる。

【0017】さらに本発明の使い捨ておむつは、一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、股領域における吸収体の縦方向側縁に沿って配置された脚部弾性手段と、第1腰領域

に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、使い捨ておむつの第1腰領域に近接した端縁の一部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記使い捨ておむつの端縁の一部に直接作用する腰回り方向分力関与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、脚部弾性手段の第1腰領域側の端部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記脚部弾性手段の端部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段の耳部への取付け領域が、少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように取付けられているものである。

【0018】さらに本発明の使い捨ておむつは、一対の端縁に近接して配置された第1および第2腰領域と、横方向中心線と関連して配置された股領域と、トップシートとバックシートの間に吸収性コアを有し股領域に関連して配置される吸収体と、第1腰領域における吸収体の横方向側縁に沿って配置された腰部弾性手段と、第1腰領域に配置された一対の耳部と、各耳部の側縁に設けられた一本の締結手段とを有する使い捨ておむつにおいて、上記耳部の周辺部分を除いた領域に周辺部分より引張り応力が小さい応力緩和区域を設け、腰部弾性手段の耳部側端部からこの端部側の応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として使い捨ておむつの第1腰領域に近接した端縁側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記腰部弾性手段の端部に直接作用する腰回り方向分力関与区域とし、上記腰回り方向分力関与区域における耳部側縁を第1側縁領域とし、使い捨ておむつの股領域側に位置する耳部端縁の一部から応力緩和区域に接して耳部の側縁に至る線を設定し、この線を境界として上記股領域側に位置する第1腰領域部分を、締結手段による引張り力の一部が上記耳部端縁の一部に直接作用する脚回り方向分力関与区域とし、上記脚回り方向分力関与区域における耳部側縁を第2側縁領域とし、締結手段の耳部への取付け領域が、少なくとも第1側縁領域の一部と第2側縁領域の一部に重なるように取付けられているものである。

【0019】

【作用】本発明の使い捨ておむつでは、吸収体の長手方向端部に沿って配置された耳部の周辺部分を除いた領域に設けた周辺部分より引張り応力が小さい応力緩和区域により、応力緩和区域にかかった締結手段による引張り力は弱められる。周辺部分では引張り応力が比較的高い

11

ため締結手段による引張り力は、弱められることなく、効果的にしかも直接的に使い捨ておむつの腰周りおよび脚周り領域に作用することができる。締結手段は、使い捨ておむつの一方端縁の一部または使い捨ておむつの横方向中心線側の耳部端縁の一部から応力緩和区域に接する線が耳部の側縁と交わる各点と関連して設定された第1側縁領域および第2側縁領域の一部と重なるように取付けられている。したがって応力緩和区域の形状、耳部の形状等に係わらず、締結手段の引張り力は必ず使い捨ておむつの一方端縁の一部または使い捨ておむつの横方向中心線側の耳部端縁の一部に作用することが保証されている。

【0020】上記締結手段の取付け領域が、第1側縁領域と重なる割合または第2側縁領域と重なる割合を調整することによって、使い捨ておむつの一方端縁の一部または使い捨ておむつの横方向中心線側の耳部端縁に直接かかる引張り力が調整できる。たとえば、取付け領域が第1側縁領域と重なる割合の方が、第2側縁領域と重なる割合より大きい時には、締結手段による引張り力は、使い捨ておむつの一方端縁の一部により大きくかかる。逆の場合には締結手段による引張り力は、使い捨ておむつの横方向中心線側の耳部端縁の一部により大きくかかる。

【0021】締結手段の耳部への取付け角度によりさらに引張り力の配分を調節することができる。締結手段を使い捨ておむつの腰周り端縁方向に傾けて取付けた場合には、使い捨ておむつの脚周りに集中する引張り力の配分量は増加する。また締結手段を使い捨ておむつの横方向中心線方向に傾けて取付けた場合には、使い捨ておむつの腰周りに集中する引張り力の配分量が増加する。

【0022】上記第1側縁領域または第2側縁領域が、腰部弾性手段の端部または脚部弾性手段の端部から応力緩和区域に接する線が耳部側縁と交わる各点と関連して設定されている場合には、締結手段の引張り力はそれぞれに必ず伝わるように保証される。

【0023】

【実施例】以下本発明の実施例を図面につき説明する。図1は本発明による使い捨ておむつの展開図を示す。この使い捨ておむつ1は、第1腰領域2aと股領域2bと第2腰領域2cとを有している。

【0024】上記使い捨ておむつ1は、全体形状を略長方形、砂時計型、T型、非対称形等、とした吸収体3と、この吸収体3の両側部分に設けられたサイドフラップ4と、このサイドフラップ4の長手方向に沿って配置されサイドフラップ4に伸縮性を付与する弾性体5と、第1腰領域2aで吸収体3の長手方向端部において横方向に延びる一対の耳部6、6と、各耳部6の側縁に設けられた1本の締結手段7とから構成されている。

【0025】図2は、図1におけるA-A線による断面図である。上記吸収体3は、図2に示すように、透液性

12

トップシート8と吸収性コア9と不透液性バックシート10から形成されている。トップシート8とバックシート10は、吸収性コア9よりも全体として大きな長さと同幅であり、吸収性コア9の縁を越えて外側に延び、少なくとも股領域2bにバックシート10とトップシート8の延長部分によりサイドフラップ4が形成される。このサイドフラップ4には、サイドフラップ4に伸縮性を付与するための弾性体5が配置されている。

【0026】上記吸収性コア9は、着用者の皮膚に対して非刺激性でかつ尿やその他の排泄物の液体を吸収して保持する機能を有するものであり、一般に、綿状バルブと呼ばれる粉碎木材バルブなどから製造される。吸収性コア9の形状および構造は、必要に応じて変えることができるが、吸収性コア9の全吸収容量は、おむつとしての設計装入量および所望の用途に対応させる必要がある。吸収性コア9のサイズと吸収能力は、子供から成人までの着用者に対応して変動される。

【0027】上記バックシート10は、吸収性コア9に吸収され収容された排泄物がおむつに接触する物品、たとえば、ベッドシートや下着類を濡らすことを防止する。したがって、バックシート10は、ポリエチレンまたはポリプロピレン等の熱可塑性フィルムなどのポリマーフィルム、またはフィルムで被覆された不織布などの複合材料とすることができる。好ましくは、バックシート10は、布様外観を生じるようにエンボス加工された熱可塑性フィルムである。

【0028】上記トップシート8は、たとえば、多孔性フォーム、網状フォーム、孔を開けたプラスチックフィルムまたは天然繊維（たとえば木材繊維または綿繊維）、合成繊維（ポリエステル繊維またはポリプロピレン繊維）あるいは天然繊維と合成繊維を混合した織布または不織布から形成される。好ましくは、トップシート8は、吸収性コア9に収容された液体を着用者の皮膚から離間するために疎水性材料とする。

【0029】上記耳部6は、全体として略台形状をなし、長方形をなす吸収体3の端側の両側縁に公知手段、たとえばヒートシール、接着剤等によって接合される。耳部6は、吸収体3のバックシート10とトップシート8の延長部分から形成することもできる。この場合は、バックシート10とトップシート8を直接接合する、またはバックシート10とトップシート8間に他のシートを挟んでそれぞれを接合して所定寸法に裁断することで吸収体3と一体にすることもできる。

【0030】好ましくは上記耳部6は、図3に示すように、天然繊維、合成繊維あるいは天然繊維と合成繊維を混合した材料の不織布11と、公知の方法によって作られた多孔性の成形フィルム12と、ポリエチレンまたはポリプロピレンの熱可塑性フィルム13を多孔性の成形フィルム12を中間にして接着剤14、15を介してラミネートすることで形成されていてもよい。耳部6がバ

13

ックシート10とトップシート8との延長部分から形成される場合には、上記不織布11はトップシート8の延長部分であり、上記熱可塑性フィルム13はバックシート10の延長部分であることができる。上記のように多孔性の成形フィルム12を間に挟むことによって耳部6全体に腰を持たせることが可能となり、使い捨ておむつ1を着用者に取付ける際の耳部6の取り扱い性が向上する。

【0031】上記耳部6には、図1に示すように、周辺部分を除いた領域に応力緩和区域20が形成されている。この応力緩和区域20は、耳部6の外形に相似した外形を有し、耳部6の周辺部分を除いた領域に形成される。図1のように耳部6が台形である場合には、耳部6の周辺部分を除いた領域に形成されこの耳部6の外形に相似しているがそれよりも小さい外形をした台形である。

【0032】上記耳部6に設けた応力緩和区域20は、図1に示すような台形ではなく、図4に示すように使い捨ておむつ1の長手方向に不連続20aを有するが全体としてはほぼ台形を呈する形状としたものでも、図5に示すように使い捨ておむつ1の長手方向に直交する方向に不連続20bを有するが全体としてはほぼ台形をなしたものであってもよい。この応力緩和区域20は、同等の効果をも有するものであれば、三角形、長方形、楕円の一部、円の一部の形状であってもよい。

【0033】上記耳部6に設けた応力緩和区域20は、図6に示すように、耳部6を構成する上記したような材料からなるフィルムに使い捨ておむつ1の長手方向に平行に複数のスリット21aを設けることで形成してもよい。このスリット21aは、吸収体3側に引張り力を伝えないものであれば、1本であってもよい。

【0034】上記耳部6に設けた応力緩和区域20は、図7に示すように、耳部6全体を弾性を有する構造とし、この耳部6の周辺部分に伸縮性のないフィルムやストランド30をそれぞれ設けることで、この周辺部分を非伸縮区域とし、その間の弾性構造部分を弾性発揮区域とすることにより形成することもできる。

【0035】上記応力緩和区域20は周辺部分より引張り応力が小さい領域である。ここで「引張り応力」とは、ある物体に引張り力が加わった時に、その引張り力に応じて物体内に生じる抵抗力のことを意味する。したがって「引張り応力が小さい領域」とは、その抵抗力が小さい領域のことであり、言い換えれば比較的小さい引張り力によって伸張可能な領域のことを意味する。応力緩和区域20が事実上存在しない場合（例えばその領域が全て切り欠かれているような場合）も「引張り応力が小さい領域」の用語に含まれる。

【0036】上記応力緩和区域20は、好ましくは、以下のようにして形成される。図8に示すように、上記したような耳部6を構成するシート21を複数の歯部22

14

aを有するプレート22と複数の歯部23aを有するプレート23との間に配置し、歯部22aを有するプレート22と複数の歯部23aを有するプレート23との間で応力緩和区域20部分のみを押圧することにより形成される。プレート23に設けた複数の歯部23aは、図9の平面図に示すように、細幅の溝部25aにより中断されている。プレート22に設けた複数の歯部22aは、図示しないが連続している。

【0037】上記シート21に形成された応力緩和区域20は、図10に示すように、複数の未変形区域25と複数の永久変形区域26とこの間の推移区域27から形成され、永久変形区域26に隆起したリブ状部分28が形成される。未変形区域25は、プレート22の歯部22aとプレート23の細幅溝部25aにより形成され、永久変形区域26は、プレート22の歯部22aとプレート23の歯部23aにより形成される。

【0038】上記未変形区域25は、図10に示すように矢印E方向に力を加えた場合に、図11に示すように塑性変形によってある程度伸び、これを越えると、図12に示すように予め塑性変形させられた永久変形区域26のリブ状部分28が平面となりそれ以上に伸びない特性を有する。このような特性を示すシートを形成するために好適な材料は、シート21がラミネートフィルムからなる場合には、その少なくとも1層が伸縮性フィルム、たとえば、ポリオレフィン、線状低密度ポリエチレン、低密度ポリエチレン高密度ポリエチレン、ポリプロピレン等からなることである。

【0039】このようにして耳部6を構成するシート21に、小さい引張り力によって伸張可能な応力緩和区域20が形成される。耳部6を構成するシート21の応力緩和区域20の周辺部分は、未加工のまま残されているので、引張り力が加わったとしても伸張することがないかまたは応力緩和区域20よりは伸張しにくい領域である。またこのようにして形成された応力緩和区域20は、引張り力が加わった時に伸張することによってその引張り力を緩和することができ、しかも耳部6の周辺部分を縮ませることがないようにされている。

【0040】耳部6を構成するシート21の材料を予めある程度の伸張性を有する材料としてもよい。この場合でも上記のような加工を応力緩和区域20に施すことによって、応力緩和区域20を周辺部分に比べて小さい引張り力で伸張可能な領域とすることができる。いずれの場合であっても、耳部6の応力緩和区域20は周辺部分に比べて小さい引張り力で伸張可能な領域とされている。

【0041】上記耳部6に設けた応力緩和区域20は、図13に示すように、締結手段7を耳部6の側縁と直交する方向に引張った際の引張り力Dを、腰回り方向の引張り力D1と脚回り方向の引張り力D2の2方向に分ける。つまり周辺部分は応力緩和区域20に比べて高い引



張り力を加えなければ伸張することがないので、締結手段7による引張り力の大部分はその周辺部分を各引張り力D1とD2として伝わり、直接吸収体側の領域Xと領域Zに作用する。しかし、締結手段7による引張り力が応力緩和区域20に作用したとしても、応力緩和区域20は比較的小さい引張り力によっても伸張でき、しかもこの応力緩和区域20の周辺部分は伸張していないので、応力緩和区域20が図12に示すような極限まで伸張することがない。したがって応力緩和区域20は、それ自身の伸張性によって締結手段7による引張り力を吸収し、吸収体側の領域Yに引張り力を直接伝えることができない。このようにして締結手段7の引張り力Dは、腰回り方向の引張り力D1と脚回り方向の引張り力D2の2つの分力に分けられる。これらの各引張り力D1とD2は、それぞれ使い捨ておむつを腰周り方向に締め付ける力と脚周り方向に締め付ける力として直接作用する。

【0042】締結手段7は、その取付け領域Rを耳部6の側縁6aに取付ける位置により、締結手段7の引張り力Dの腰回り方向の引張り力D1と脚回り方向の引張り力D2の2つの分力の配分を調節することができる。

【0043】すなわち、締結手段7の取付け領域Rを図13に示すような応力緩和区域20の側縁部分のほぼ中間に対応した位置とした場合には、締結手段7を矢印方向に引張った際の引張り力Dは、使い捨ておむつの腰回り方向の引張り力D1と脚回り方向の引張り力D2の2方向に同じ程度の大きさで分けられる。

【0044】また、締結手段7の取付け領域Rが、図14に示すような図13に示す位置より下側の位置では、締結手段7を矢印方向に引張った際の引張り力Dは、使い捨ておむつの腰回り方向の引張り力D1が小さく、脚回り方向の引張り力D2が大きくなるように分けられる。

【0045】さらに、締結手段7の取付け領域Rが、図15に示すような図13に示す位置より上側の位置では、締結手段7を矢印方向に引張った際の引張り力Dは、使い捨ておむつの腰回り方向の引張り力D1が大きく、脚回り方向の引張り力D2が小さくなるように分けられる。

【0046】締結手段7による引張り力が確実に所要部位に向かうための締結手段7の取付け領域Rの位置と、その取付けるべき位置関係について説明をする。

【0047】締結手段7の取付け位置Rは、図16に示す作図により決められる。この締結手段7の取付け位置は、締結手段7の引張り力を効果的にしかも直接的に使い捨ておむつの腰周りおよび脚周りの意図した領域に配分する上で重要である。

【0048】図16において、使い捨ておむつ1の縦方向中心線はL-L'、横方向中心線はH-H'である。この中心線L-L'と使い捨ておむつ1の第1腰領域近傍の一方端縁30との交点をP、耳部6の横方向中心線

H-H'側に位置する下端縁6bとサイドフラップ4との交点をQとし、交点Qから応力緩和区域20の横方向中心線H-H'側に接して延びる線をL2、交点Pから応力緩和区域20の一方端縁30側に接して延びる線をL1とする。線L2と耳部6の側縁6aとの交点はBで示され、線L1と耳部6の側縁6aとの交点はAで示される。側縁6a上において点Aより一方端縁30に位置する側縁領域は第1側縁領域a、点Bより横方向中心線H-H'側に位置する側縁領域は第2側縁領域bで示される。

【0049】締結手段7による腰回り方向の引張り力Dは、耳部の側縁6aにかかったときに耳部6内に分散する。図17はその様子を示している。図17において、点Mは締結手段7の取付け領域R内に含まれるある点であり、この場合点Aと一致している。締結手段7の引張り力の一部が点Mにかかったとき、点Mにかかる代表的な分力にはF1、F2、F3、F4がある。F1は使い捨ておむつの一方端縁30方向に向いた分力であるが、上記点Pには向いていない分力である。したがってこの分力F1は直接的に点Pに作用することがない。F2は線L1上を伝い点Pに直接達することができる分力である。F3は応力緩和区域20方向に向かい応力緩和区域20を伸張させることができるかもしれないが、図13に示した領域Yに達することがない分力である。F4は点Qの方向に向かう分力であり、この分力は直接点Qに作用することができる。

【0050】締結手段7の取付け領域R内のある一点が、側縁6a上において、点Mよりさらに横方向中心線H-H'側に位置している場合（図17においてこの点をM'で示す）、つまり第1側縁領域a（図16を参照）を外れた領域に位置している場合には、この点M'から点Pに向かう分力は応力緩和区域20によって緩和されるから、上記F1からF4の分力のうちF2に相当する分力は無くなる。したがって締結手段7の取付け領域Rが点M'を含んでいたとしても点Pに直接作用する分力は発生しない。逆に点Mが側縁6a上において、一方端縁30側、つまり第1側縁領域a内に位置している場合（図17においてM'で示す）には、点Pに直接作用する分力がある。

【0051】以上のことから明らかなように、線L1は点Pに締結手段7の引張り力を直接作用させるための境界線であり、締結手段7の取付け領域R内のある点がこの境界線より端縁30よりの第1側縁領域a内にあると、この点にかかる引張り力の少なくとも一部は点Pに直接作用することができる。線L2は点Qと関連して決定されていることから、上記した点Aの場合とは対称になる。つまり線L2は点Qに締結手段7の引張り力を直接作用させるための境界線であり、締結手段7の取付け領域R内のある点がこの境界線より端縁30よりの第1側縁領域a内にあると、この点にかかる引張り力の少な

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くとも一部は点Qに直接作用することができる。したがって、予め意図した使い捨ておむつ上の点P、Qに直接的に締結手段7の引張り力を作用させるためには、線L1と関連して定められた第1側縁領域a、線L2と関連して定められた第2側縁領域bの一部と締結手段7の取付け領域Rが重なるように、締結手段7を取付けばよい。

【0052】点Pに直接的に締結手段7による引張り力を作用させることができれば、点Pがおむつの縦方向中心線L-L'上に位置した点であるから、両方の耳部に配置された締結手段7が互いに点Pを引張りあうように作用し、腰周りにおける締め付けが良好になる。また点Qに直接的に締結手段7による引張り力を作用させることができれば、点Qからさらに吸収体3の方向に向けて引張り力が伝わるから、脚周りにおける締め付けが良好になる。

【0053】他の実施例では上記点Pは、図18に示すように対向する耳部の側縁6aと端縁30との交点であってもよい。また点Pは図19に示すように、応力緩和区域20の縦方向中心線L-L'側の側部と接し、この中心線L-L'に平行な直線31と端縁30との交点であってもよい。いずれの場合にも、応力緩和区域20に接して耳部6の側縁6aに至る線L1を引くことによって点Aを定めることが可能である。

【0054】腰回り方向の引張り力D1と脚回り方向の引張り力D2は、締結手段7の取付け領域Rが、それぞれ第1側縁領域a、第2側縁領域bと重なる割合によって調整することができる。

【0055】締結手段7の取付け領域Rが、第1側縁領域aと多く重なるほど、締結手段7の引張り力は点Pに直接作用する割合を増す。締結手段7の取付け領域Rが、直接点Pに作用することができる点をより多く含むことができるからである。線L1と、端縁30と、側縁6aで囲まれた領域は腰周り方向分力関与区域42であり、側縁6aにおける腰周り方向分力関与区域が第1側縁領域aである。そしてこの第1側縁領域a側に締結手段7の一部が取付けられている限り、締結手段7の引張り力は点Pに直接作用することができ、締結手段7の取付け領域Rが第1側縁領域aと多く重なるほど腰周り方向分力関与区域42に配分される分力が大きくなる。

【0056】逆に、締結手段7の取付け領域Rが、第2側縁領域bと多く重なるほど、締結手段7の引張り力は点Qに直接作用する割合を増す。締結手段7の取付け領域Rが、直接点Qに作用することができる点をより多く含むことができるからである。線L2と、耳部6の下端縁6bと、側縁6aで囲まれた領域は脚周り方向分力関与区域43であり、側縁6aにおける脚周り方向分力関与区域が第2側縁領域bである。そしてこの第2側縁領域b側に締結手段7の一部が取付けられている限り、締結手段7の引張り力は点Qに直接作用することができ、

締結手段7の取付け領域Rが第2側縁領域bと多く重なるほど脚周り方向分力関与区域43に配分される分力が大きくなる。

【0057】締結手段7の耳部6への取付け領域Rが、図20に示すように、締結手段7が点Aと点Bを含む位置でかつ点Aと点Bが締結手段7の幅方向中心線から等間隔にあれば、締結手段7の第1側縁領域aと第2側縁領域bの占める部分は同程度である。したがって腰回り方向分力関与区域42と脚回り方向分力関与区域43にはほぼ同程度の分力が配分され、ひいては点P、点Qにかかる引張り力はほぼ同等になる。さらに図21に示すように、応力緩和区域20に接して通る各線L1、L2の交わる角度を二等分する線32上に、締結手段7の中心線を配置することによって、より確実に各関与区域42、43に配分される分力を均等化することができる。

【0058】また、締結手段7の耳部6への取付け領域Rが、第1側縁領域a、第2側縁領域bと重なる割合を異ならせることによって、各関与区域への引張り力の配分を異ならせることができる。

【0059】つまり、締結手段7の耳部6への取付け位置が、図22に示すように、締結手段7の取付け領域Rが第1側縁領域aと完全に重なり、第2側縁領域bの一部としか重ならないようなときは、第1側縁領域aと重なる割合の方が大きいので、腰周り分力関与区域42のほうへ、より大きな分力が配分される。

【0060】逆に、締結手段7の耳部6への取付け位置が、図23に示すように、締結手段7の取付け領域Rが第2側縁領域bと完全に重なり、第1側縁領域aの一部としか重ならないようなときは、第2側縁領域bと重なる割合の方が大きいので、脚周り分力関与区域43のほうへ、より大きな分力が配分される。

【0061】上記いずれの場合においても、要は各重なり割合に相違があればよく、必ずしも締結手段7の取付け領域Rが一方の側縁領域に含まれている必要はない。

【0062】図24および図25は、耳部6と応力緩和区域20の相対位置による第1側縁領域aと第2側縁領域bの関係を示す図である。

【0063】図24の実施例では、応力緩和区域20の形状が、図16で示す応力緩和区域20の形状と異なり、縦方向に膨張したより四角形に近似した形状をしている。この例においては、点Pから応力緩和区域20に接して延びる線L1と点Qから応力緩和区域20に接して延びる線L2は、途中で交わることなく耳部6の側縁6aに至っている。図24に示すように、側縁6aにおける第1側縁領域aは点Aより端縁30側区域であり、第2側縁領域bは点Bより横方向中心線H-H'側区域である。したがって、各側縁領域a、b間に腰回り方向分力関与区域42と脚回り方向分力関与区域43に隣接しない区域33が形成される。締結手段7の引張り力を腰回りと脚回りに直接的に集中するためには、締結手段7

19

の取付け領域Rが、区域3 3をまたいで第1側縁領域aと第2側縁領域bを含む位置に配置されなければならない。つまりこの場合にも締結手段7の取付け領域Rが、各側縁領域a、bの一部と重なることによって、締結手段の引張り力を所要部位に直接的に集中させられる。

【0064】図25の実施例では、点Pから応力緩和区域20に接して延びる線L1と点Qから応力緩和区域20に接して延びる線L2は、図16と同様に途中で交差して耳部6の側縁6aに至っているが、図16とは異なっていて、線L2が耳部6の側縁6aの延長線上で交差している。しかしながら点Bは耳部6から離れた架空の点であるから、第2側縁領域bは実際の耳部6の側縁6aとの重なりであるb'の領域となる。この場合も、締結手段7の取付け領域Rは、第1側縁領域aと第2側縁領域b'の一部と重なっていれば良い。つまり、線L1、L2が実際に側縁6aと交わらない場合であっても、その側縁の延長線との交点を求めることによって各側縁領域a、bを決定できる。したがって、本願明細書において各線L1、L2が「側縁と交わる点」という場合には、「側縁の延長線と交わる点」の意味を含んでいる。

【0065】図26は、耳部6の下縁6bを円弧状とした形状をなす実施例を示すものであり、線L2は、耳部6の下端縁6bの円弧状部分Sに接し、応力緩和区域20に接して延びて耳部6の側縁6aと点Bで交差する。したがって点Bにかかった力は、線L2上を伝い吸収体3側に伝わるることができる。しかしながら図16のように耳部6の付け根部分Qから応力緩和区域20に接する線34を引いたのでは、線34と側縁6aとの交点B'にかかった力は線34上を伝っても耳部6の下縁6bでカットされてしまうのである。

【0066】この場合、第1側縁領域aは耳部6の側縁6aの点Aより矢印方向上側部分となり、第2側縁領域bは、耳部6の側縁6aの点Bより矢印方向下側部分となる。締結手段7の取付け領域Rは、耳部6の側縁6aの点Aと点Bとの間の区域cの一部と少なくとも重なる必要がある。

【0067】図27ないし図30は本発明の他の実施例を示し、図27ないし図30に示す実施例では、図1に示す実施例と締結手段の取付け方向のみが異なっている。

【0068】図27および図28に示す実施例では、締結手段7が使い捨ておむつの端縁に対して斜め上方に0度< $\theta$ <45度の角度で配置されている。

【0069】締結手段7は、図27に実線で示す取付け位置では、点線で示す横方向の締結手段7を横方向に引張って、図13に示すように腰回り方向の引っ張り力D1と脚回り方向の引っ張り力D2の分力を同程度としたものと比較して、締結手段7の引張り方向が脚回り方向を向いているので、脚回り方向の引っ張り力D2が腰回り方向の引っ張り力D1より大きく設定される。しか

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し、締結手段7は、第1側縁領域aを含んだ位置であるから腰回り方向の引っ張り力D1は確保される。

【0070】締結手段7は、図28に示す取付け位置では、第2側縁領域bの占める部分が第1側縁領域aの占める部分より大きいので、図27で示す腰回り方向の引っ張り力D1と脚回り方向の引っ張り力D2の分力配分に比較して、さらに、脚回り方向の引っ張り力D2が大きく腰回り方向の引っ張り力D1が小さくなる。

【0071】図29および図30に示す実施例では、締結手段7が使い捨ておむつの端縁に対して斜め下方に0度< $\theta$ <45度の角度で配置されている。

【0072】締結手段7は、図29に実線で示す取付け位置では、点線で示す横方向の締結手段7を横方向に引張って、図13に示すように腰回り方向の引っ張り力D1と脚回り方向の引っ張り力D2を同程度の分力としたものと比較して、締結手段7の引張り方向が腰回り方向を向いているので、腰回り方向の引っ張り力D1が脚回り方向の引っ張り力D2より大きい分力に設定される。しかし、締結手段7は、第2側縁領域bを含んだ位置であるから脚回り方向の引っ張り力D2は確保される。

【0073】締結手段7は、図30に示す取付け位置では、第1側縁領域aの占める部分が第2側縁領域bの占める部分より大きいので、図29で示す腰回り方向の引っ張り力D1と脚回り方向の引っ張り力D2の配分に比較して、さらに、腰回り方向の引っ張り力D1が大きく脚回り方向の引っ張り力D2が小さく設定される。

【0074】次に図31ないし図32は他の好適な実施例を示している。

【0075】図16が第2側縁領域bを決定するに際して、耳部6の下端縁6bの一部を基準にして線L2を引いたのに対し、図31の場合には脚部弾性部材5の端部36を基準にして応力緩和区域20に接する線L2を引くようにしている。この場合には図31から明らかなように、点Bにかかる引張り力は直接脚部弾性部材5の端部36に作用するように設計されている。脚部弾性部材5の端部36は、図31に示すように脚部弾性部材5の中央とすることができし、また内側端部37あるいは外側端部38を基準とすることもできる。いずれの場合であっても締結手段7の引張り力が直接脚部弾性部材5に作用するための第2側縁領域bを設定することができる。

【0076】また図16が第1側縁領域aを決定するに際して、縦方向中心線L-L'と端縁30との交点Pを基準にして線L1を引いたのに対し、図32の場合には端縁30側近傍に配置された腰部弾性部材35の端部39を基準にして応力緩和区域20に接する線L1を引くようにしている。この場合には図32から明らかなように、点Aにかかる引張り力は直接腰部弾性部材35の端部39に作用するように設計されている。腰部弾性部材35の端部39は、図32に示すように腰部弾性部材3

5の中央とすることができし、また外側端部40あるいは内側端部41を基準とすることもできる。いずれの場合であっても締結手段7の引張り力が直接腰部弾性部材35に作用するための第1側縁領域aを設定することができる。

【0077】耳部6に傾斜配置される締結手段7は、図33のように、中間位置で耳部側に折り返され、使用に際して、耳部より突き出るようにしたり、図34に示すように、全体形状をフォーク状として、中間位置で耳部側に折り返され、使用に際して、耳部より突き出すような形状とすることもできる。このように、締結手段7の中央部より先端部分を耳部側に折り曲げておくことで、締結手段7が耳部6より外側に突き出てしまうことがない。図34に示すように、全体形状をフォーク状とした締結手段7では、より確実に締結手段7の引張り力を腰回り方向および脚回り方向に向けることができる。

【0078】なお、耳部6に設けた応力緩和区域20は、弾性発揮領域であるから、その領域が腰骨等に当たった場合、その形状に応じて容易に変形されるので、着用者の快適性が向上することになる。

【図面の簡単な説明】

【図1】本発明による使い捨ておむつの展開図。

【図2】本発明による使い捨ておむつの吸収体部分の断面図。

【図3】耳部の一例を示す断面図。

【図4】本発明による使い捨ておむつの応力緩和区域の変形例を示す図。

【図5】本発明による使い捨ておむつの応力緩和区域の変形例を示す図。

【図6】本発明による使い捨ておむつの応力緩和区域の変形例を示す図。

【図7】本発明による使い捨ておむつの応力緩和区域の変形例を示す図。

【図8】応力緩和区域の成形手段を示す図。

【図9】図8の成形手段のプレート部分の平面図。

【図10】図8の成形手段により成形された応力緩和区域の一部斜視図。

【図11】図10の成形された中間フィルムを引っ張った中間段階を示す図。

【図12】図10の成形された中間フィルムを引っ張った段階を示す図。

【図13】本発明による使い捨ておむつの締結手段の引っ張り応力が腰回り方向および脚回り方向にほぼ等しく分散する状態を示す図。

【図14】本発明による使い捨ておむつの締結手段の引っ張り応力が腰回り方向が小さく脚回り方向が大きく分散する状態を示す図。

【図15】本発明による使い捨ておむつの締結手段の引っ張り応力が腰回り方向が大きく脚回り方向が小さく分散する状態を示す図。

【図16】耳部における第1側縁領域aと第2側縁領域bを示す図。

【図17】締結手段の引張り力が分散する様子を示した図。

【図18】第1側縁領域を決定するための他の例を示す図。

【図19】第1側縁領域を決定するための他の例を示す図。

【図20】締結手段を耳部の第1側縁領域aの占める部分と第2側縁領域bの占める部分が等しい位置に取付けた状態を示す図。

【図21】締結手段の中心線を第1線と第2線が交わる角度を二等分した線上に配置した状態を示す図。

【図22】締結手段を第2側縁領域bの占める部分が小さく第1側縁領域aの占める部分が大きい位置に取付けた状態を示す図。

【図23】締結手段を第2側縁領域bの占める部分が大きく第1側縁領域aの占める部分が小さい位置に取付けた状態を示す図。

【図24】本発明による使い捨ておむつの応力緩和区域の変形例における第1側縁領域aと第2側縁領域bを示す図。

【図25】本発明による使い捨ておむつの応力緩和区域の変形例における第1側縁領域aと第2側縁領域bを示す図。

【図26】本発明による使い捨ておむつの耳部の変形例における第1側縁領域aと第2側縁領域bを示す図。

【図27】本発明による使い捨ておむつの他の実施例の上方傾斜した締結手段を図20に相当する位置に取付けた状態を示す図。

【図28】本発明による使い捨ておむつの他の実施例の上方傾斜した締結手段を図23に相当する位置に取付けた状態を示す図。

【図29】本発明による使い捨ておむつの他の実施例の下方傾斜した締結手段を図20に相当する位置に取付けた状態を示す図。

【図30】本発明による使い捨ておむつの他の実施例の下方傾斜した締結手段を図22に相当する位置に取付けた状態を示す図。

【図31】第2側縁領域を決定するための他の例を示す図。

【図32】第1側縁領域を決定するための他の例を示す図。

【図33】本発明による使い捨ておむつの傾斜した締結手段の変形例を示す図。

【図34】本発明による使い捨ておむつの傾斜した締結手段の変形例を示す図。

【符号の説明】

1 使い捨ておむつ

3 吸収体

23

24

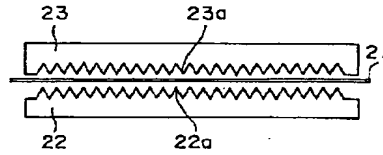
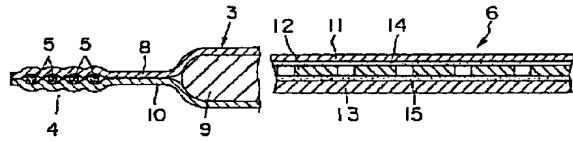
6 耳部  
7 締結手段  
20 応力緩和区域  
D 引っ張り力

\* D1 腰回り方向引っ張り力  
D2 脚回り方向引っ張り力  
a 第1側縁領域  
\* b 第2側縁領域

【図2】

【図3】

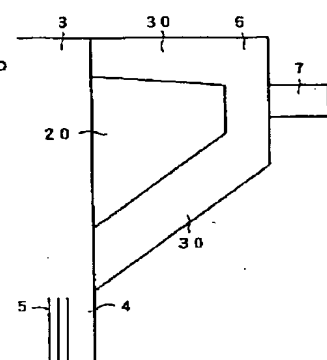
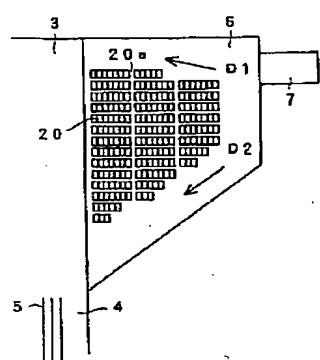
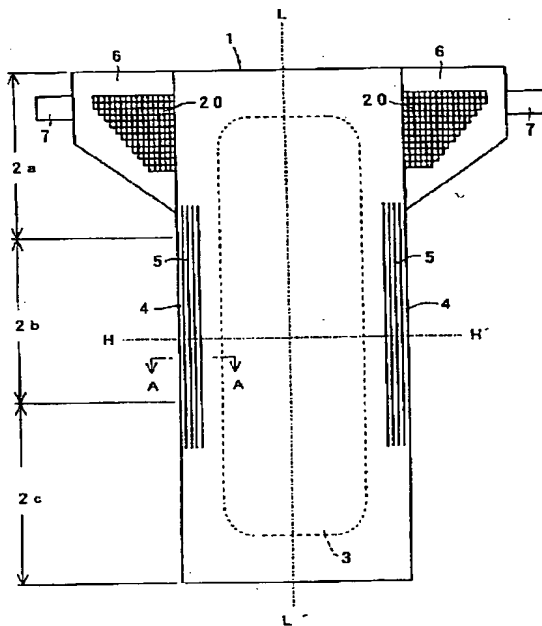
【図8】



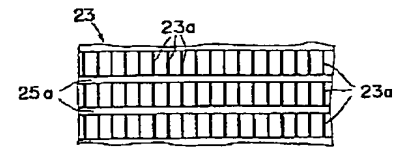
【図1】

【図4】

【図7】



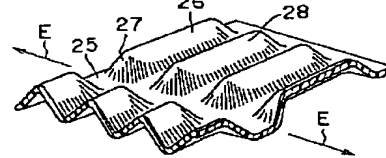
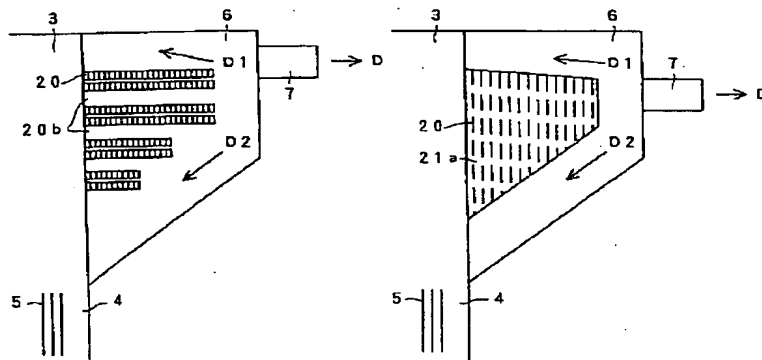
【図9】



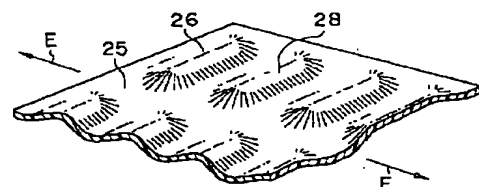
【図5】

【図6】

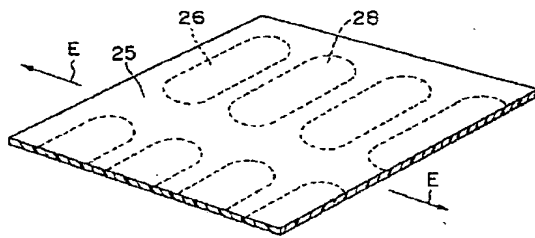
【図10】



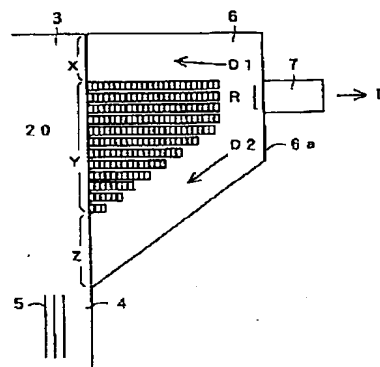
【図11】



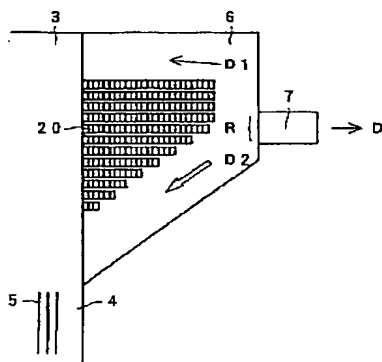
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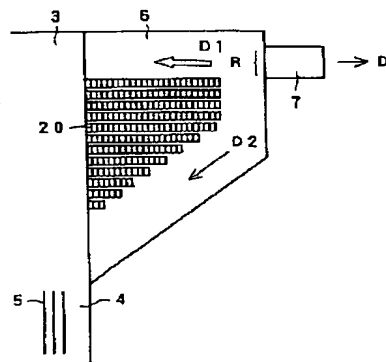
【図13】



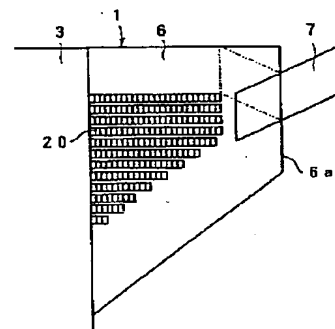
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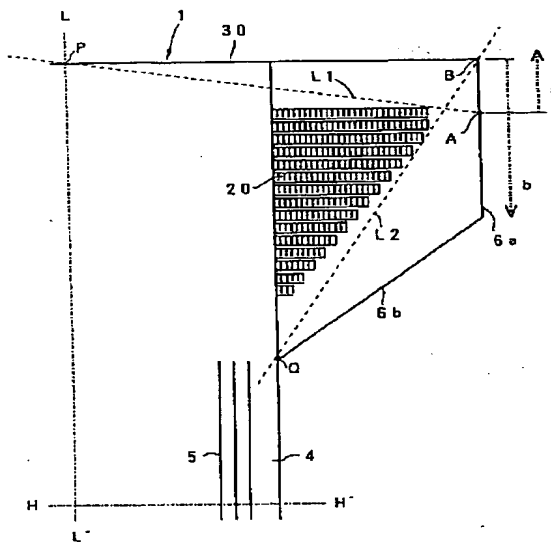
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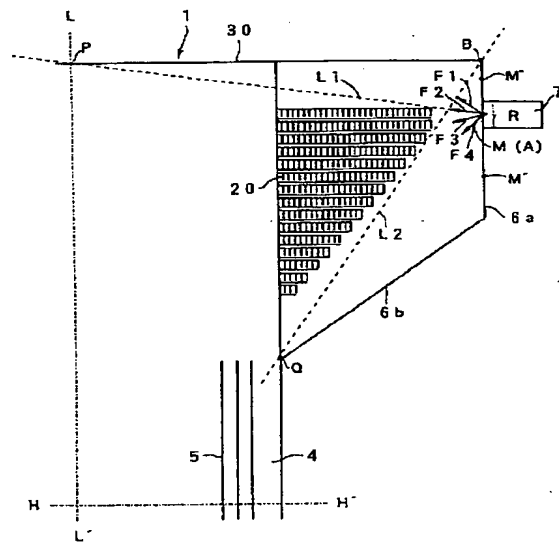
【図16】



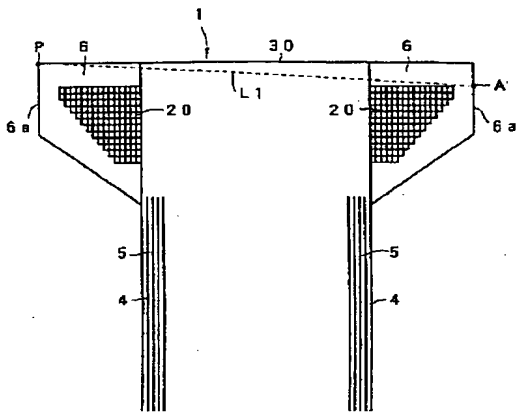
【図17】



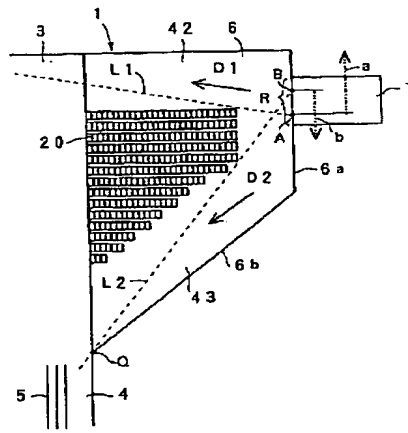
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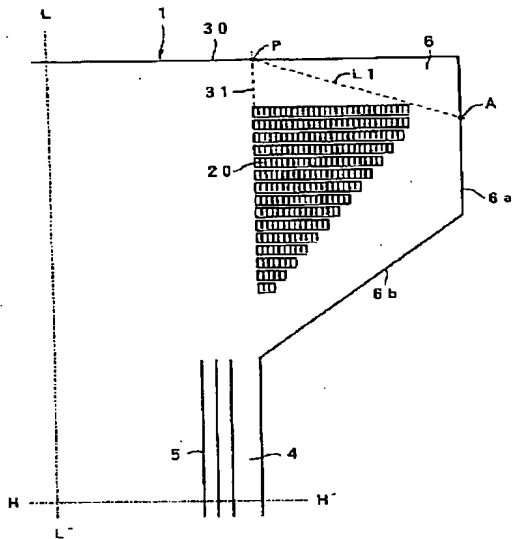
【図18】



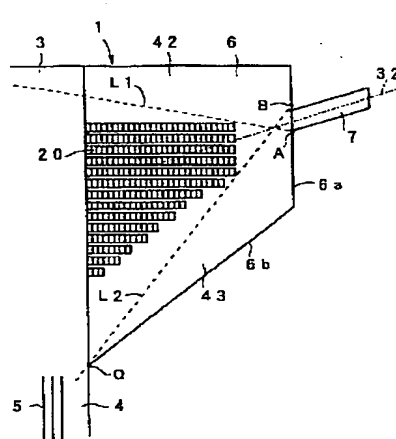
【図20】



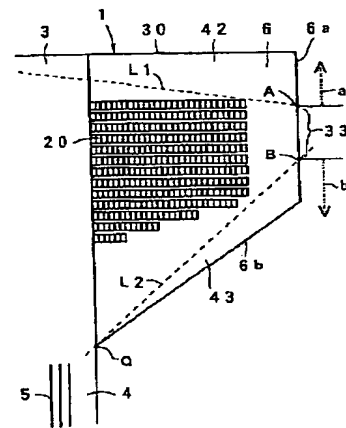
【図19】



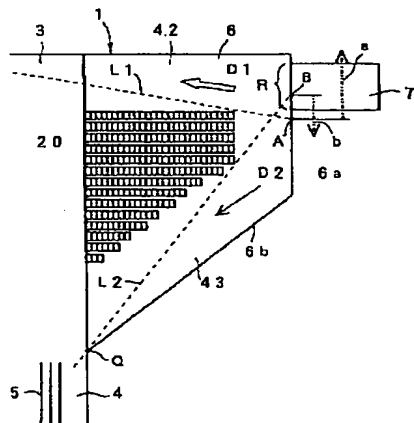
【図21】



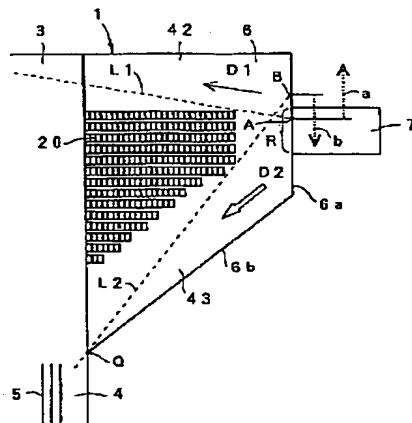
【図24】



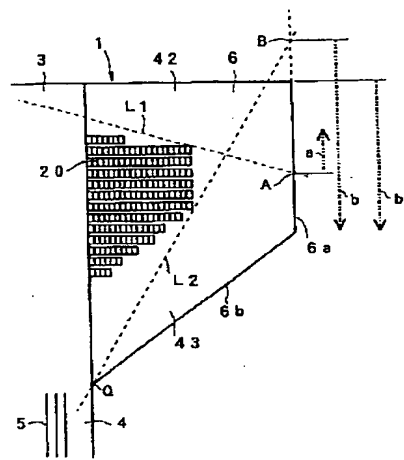
【図22】



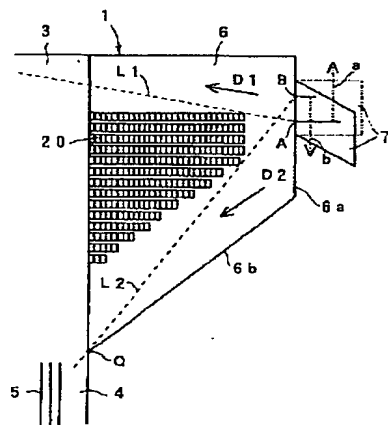
【図23】



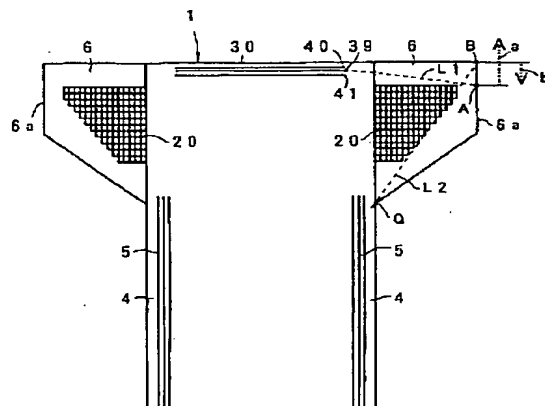
【図 25】



【图29】



【図 3 2】



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